

EDUCATION RESOURCE GUIDE FOR INDIANA SOIL & WATER CONSERVATION DISTRICTS

**Compiled by
a Committee of SWCD Educators
and Support Personnel**



Are you a part-time secretary needing a booth for a 4-H fair?

Are you a seasoned conservation educator who needs some new ideas?

Have you just been called to speak to 250 high school sophomores?

Is your field day only two weeks away?

So you've never spoken to third graders. Do you have a teacher demanding your appearance in class tomorrow?

Need a new and exciting contest?

This Guide Is For You!

This education guide is a compilation of effective tools and lessons used by Indiana Soil & Water Conservation District educators. The submitted information has been collected from educators in the state, organized by the project committee, and written in a user-friendly format.

The goal of this guide is to provide a time-saving tool to all SWCDs free of charge. It will provide every district with ready-to-use plans for a variety of effective educational activities.

Guide users are encouraged to use, copy, and distribute enclosed materials as needed. Feel free to add to or modify the material to create a unique education program to suit your county's needs.

It is hoped that this guide will become a convenient tool for any individual interested in soil and water conservation.

Project Committee

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Betsy Wilkinson, SWCD Coordinator, Spencer County
Rebecca Oakes, SWCD Secretary/Education Coordinator, Knox County
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Contests

Farm Day Poster Contest

Topic/Subject Area: Something learned at the county wide farm day

Target Audience:

Audience Size: About 250 participants

Summary: Posters are displayed at the local library, the SWCD booth at the county 4-H fair, and local art shows. Judges include supervisors and associates. Award money for the first three placings from each school as well as certificates for all participants are given by the SWCD educator at school award programs.

Description:

Materials Needed: Certificates, prizes, letters and rules for teachers

References/Other Support Materials: NACD poster; contest rules.

Preparation Time: SWCD Education Coordinator puts letters and lists of rules in teacher mailboxes at schools, and posters are picked up on request. Judging takes about two hours per school.

Presentation Time:

Handouts Used:

Follow Up: Letters and prize money are sent to winners by mail to avoid checks being lost on bus and thank you letters are sent to teachers, classes participating, principals, and judges.

Community Action Ideas:

Costs: Prize money - \$90.00

Certificates - Cost of colored paper for office printer

Submitted By: Theresa Gabaree

Contact Person: Theresa Gabaree Phone: (812)883-3704

E-mail Address:

Contests

T-Shirt Contest

Topic/Subject Area: _____ County Soil & Water Conservation District

Target Audience: Students in Grades 4-6

Audience Size: May vary

Summary: Design for T-shirt must show conservation theme

Description: (See following sheet) Our district wanted a new design for our T-shirts that we could use as door prizes, awards, and sales at a reasonable cost.

Materials Needed: 8 1/2" X 11" plain white paper and black marker, pen, or dark pencil

References/Other Support Materials:

Preparation Time: Time used was for visit to schools and picking up entries.

Presentation Time:

Handouts Used: Handouts were the rules for the contest.

Follow Up: Reminded schools one week prior to deadline of the contest by telephone.

Community Action Ideas:

Costs: Very few costs associated (the cash awards given to winners and the new design printed on the shirts).

Submitted By: Darlene Fischer

Perry SWCD

125 S. 8th St., Cannelton, IN 47520

Contact Person: Darlene Fischer Phone: (812)547-4686

E-mail Address: in338!dfischer

Contests

1998 T-SHIRT CONTEST

To: Perry County Fourth, Fifth, and Sixth Grade Students

The Perry County Soil and Water Conservation District is planning to design a new T-shirt for our district. The Board of Supervisors are encouraging you to help design their new T-shirt to spread the word of soil & water conservation. These T-shirts are sold at a reasonable cost and are used as door prizes and awards to promote soil & water conservation.

Who May Enter: Perry County Students in Grades 4-6

Design Size: Should be 8 1/2 X 11 inches

Materials: Use plain white paper (no lines)

Theme: The words "Perry County Soil & Water Conservation District" must be part of the design

Background: The district provides a means for all interested people in the county to work together for natural resource conservation and development. The district's purpose is to provide education and promote and practice conservation. We provide services such as: rental equipment (No-till Drills, Aer-Way tiller, Sub-Tillers, and Earthmover) and other materials that assist land owners to conserve soil and water resources. The T-shirt design should keep conservation in mind.

Artwork: Use black marker, black ink pen, or dark pencil

Identification: Place the following information on an index card or 3 X 5 inch paper and enclose in a large envelope. Designer's name and year should be included as part of the design. Design should not be folded or bent.

Student's name and address
Parent's name and telephone number
Teacher's name
Grade level
School name and address

Contest Deadlines: Submit the entries to your principal's office by Monday, May 11. Darlene Fischer, SWCD Coordinator, will pick up entries by Tuesday, May 12, 1998.

Awards: The county winners shall receive the following awards from the Perry County Soil and Water Conservation District:

Grades 4-6
1st - \$20 and T-shirt with his or her design
2nd - \$13

Contests

3rd - \$7

Judging: Will be based on presentation, originality, and neatness. The Perry County Soil and Water Conservation District Board of Supervisors will select the county winners.

Contact: Perry County Soil and Water Conservation District, 125 S. 8th Street, Room 6 (Courthouse Annex), Cannelton, IN 47520 Phone 547-4686.

Contests

Photo Identification Contest

Topic/Subject Area: Photos from around the county

Audience Size: Any

Summary: Contest was used mainly to draw attention to our booth at the 4-H fair

Description: Pictures were taken around the county using unique angles and composition to make identification somewhat challenging. Winners are chosen from correct entries.

Materials Needed: Camera, film, prize giveaways, poster board

References/Other Support Materials: Ideas from Mark McCauley

Preparation Time: 2 days

Presentation Time: N/A

Handouts Used: Answer sheet, other conservation information made available also

Follow Up:

Community Action Ideas:

Costs: \$20

Submitted By: Mark McCauley

Hamilton SWCD Address: 925 Division St. Rm.103, Noblesville, IN 46060

Contact Person: Mark McCauley Phone: (317)773-1432

E-mail Address: in390!mmccaule

Contests

Putt For Conservation Quiz/Contest

Topic/Subject Area: Conservation Quiz/Contest

Target Audience: Youth

Audience Size: Any Size

Summary: Questions concerning natural resources conservation, water quality, agriculture, etc.

Description: Built a portable putting green. Correct answers to conservation questions gave more chances at putting. Prizes given for getting a ball in the hole.

Materials Needed: Wood, grass carpet, screws, golf balls, putters, food coupons, toy prizes, quiz questions

References/Other Support Materials: Idea from Mark McCauley

Preparation Time: 3-4 days

Presentation Time: N/A

Handouts Used: Quiz and puzzle sheets, fast food coupons, toy prizes

Follow Up:

Community Action Ideas:

Costs: We borrowed golf balls and putters (no cost), wood, grass carpet, screws, signs, etc. (approximately \$70).

Submitted By: Mark McCauley

Hamilton SWCD

925 Division St. Rm. 103, Noblesville, IN 46060

Contact Person: Mark McCauley Phone: (317)773-1432

E-mail Address: in390!mmccaule

Contests

5th Grade Poster Contest

Topic/Subject Area: Different theme picked each year on trees, soil, water, wildlife, etc..
Have been using basic theme of soil stewardship for the last few years.

Target Audience: 5th grade students of county schools

Audience Size: Approximately 100 participants (varies from 80 to 120)

Summary: Posters are displayed with school art exhibits show sponsored by local extension homemakers at 4-H fairgrounds. Supervisors judge posters and award prize money for first three placings from each school and a traveling plaque to the school with overall champion winner.

Description:

Materials Needed:

References/Other Support Materials:

Preparation Time: Send letters to school teachers and art teachers. The SWCD supervisors judge the posters, which takes approximately three hours.

Presentation Time:

Handouts Used:

Follow Up: Letters and prize money are sent to winners and thank you letters are sent to teachers and classes participating. Posters are used for fourth grade Ag Day Program and in the SWCD's fair booth exhibit. 4-H Council approved the use of the posters for 4-H soil and water project exhibits and completion, but the posters can not be used as a state fair exhibit due to differences in requirements.

Community Action Ideas:

Costs: Prize money = \$103 Engraving plaque = \$4 (plaque donated)

Submitted By: Jaci Witty
Parke SWCD
RR 4, Box 291F, Rockville, IN 47872
Contact Person: Jaci Witty Phone: (765)569-3551
E-mail Address: jwitty@inrockvill.fsc.usda.gov

Contests

Grades 5 & 6 Annual Poster Contest

Topic/Subject Area: Varies by year, but conservation oriented

Audience Size:

Summary: A poster contest to design placemats for annual meeting.

Description: The SWCD Education Coordinator travels to the schools, gives a short talk about the special topic and its importance, shows a video that relates to the topic, and explains the rules giving each student a copy of the rules. We ask that that poster be made on 8 1/2 X 11 or 8 1/2 X 14 inch paper and in color. Students have 3 weeks to complete posters. We then pick the posters up, record all entries, and those who did not follow the rules are disqualified.

Three years ago, in appreciation for all the posters submitted over the past 16 years, the secretary decided she would personally give an award to the outstanding poster which was neat in appearance and carried out the theme. The Secretary Award would be \$5 and given in addition to the \$5, \$3, and \$2 given by the District. The schools do not compete against each other. Other than the Secretary Award, all schools have three winners. The students can enter as many posters as they choose. The Secretary Award is matted, framed, and hangs in the office gallery. The first place winners from each school are laminated and, along with the Secretary Award winner, are put on display in the District Fair Booth. The posters are not returned as they are used as placemats at the District's Annual Meeting.

Materials Needed: 8 1/2 X 11 inch or 8 1/2 X 14 inch paper

References/Other Support Materials:

Presentation Time: 30 minutes

Handouts Used: Copy of rules

Submitted By: B. Joan Riegler
Newton SWCD

Address: 213 E. Newton Street, Morocco, IN 47963

Contact Person: B. Joan Riegler Phone: (219)285-6889

E-mail Address:

Contests

Nature Bowl

Topic/Subject Area: Environmental competition for 4th grade held at SWCD outdoor lab

Target Audience: 4th grade, but could be for all grade levels

Audience Size: 155 students

Summary: Students receive instruction on natural resource topics and then are tested

Description: (See following page.)

Materials Needed: Test papers for students, grading sheets for judges, tally sheets for score keepers

References/Other Support Materials:

Preparation Time: Plan at least 2 months in advance - more if possible to get speakers that you need

Presentation Time: Sessions last 20 minutes

Handouts Used: Test papers are at each stop

Follow Up: Send thank you notes to all facilitators and to all who assisted with the field day

Community Action Ideas: Have local news media informed of field day

Costs: Minimal

Submitted By: Saraellen Peters
Putnam SWCD

Address: 64 N US Hwy 231, Rm 2, Greencastle, IN 46135

Contact Person: Saraellen Peters Phone: (765)653-7454

E-mail Address: pcswcd@ccrtc.com

Contests

Putnam County Soil & Water Conservation District
c/o Saraellen Peters, District Coordinator
64 N. US Highway 231
Room 2
Greencastle, IN 46135

Enclosed you will find all the information for the "Nature Bowl". I have enclosed a news release explaining what the Nature Bowl is and all of the correspondence sent to presenters and helpers. Like the Envirothon, you need Presenters, score keepers, time keeper, guides, and test graders. If you have the instruction book for hosting an Envirothon, you have the procedure for a 4th grade Nature Bowl.

Tzouanakis Elementary in Greencastle has been the school that has participated in the Nature Bowl because they have seven 4th grade classes with 155 students. We have 7 stops to coincide with the 7 classes. We present the top 3 winning teams with a certificate they can hang in their classrooms. The first place winner receives a "Traveling Trophy" made out of wood from the TSI forest at our outdoor lab.

If you have any questions, contact me at ph.(765)653-7454.

Saraellen Peters, District Coordinator

Contests

FOR IMMEDIATE RELEASE

On September 24, 1996, the Putnam County SWCD hosted an environmental competition, designed to follow the same format as the Envirothon, for 4th graders called the "Nature Bowl". The competition was hosted by the SWCD and held at O.W.L. Trail, a 60 acre site that is being managed for timber production and wildlife habitat. O.W.L. Trail (Outdoor Wilderness Laboratory) is located at Glenn Flint Lake on Little Walnut Creek Conservancy District Property in Putnam County. Attending the field day were 171 students representing 7 fourth grade classes from Tzouanakis Elementary in Greencastle. Seven resource specialists gave presentations on: Soils, Tree Planting, Forestry, Wildlife, Aquatics, Plants, and Prairie. Each class rotated to a designated session, listened to the presentation, took a 5 minute quiz, and then moved on to the next session. The tests were graded after each session and the total scores were tallied at the end to determine the winning class. A special first place trophy, given to the winning class, was made from an Ash tree right from the O.W.L. Trail TSI Forest! The "Nature Bowl" was a combined effort of the SWCD, NRCS, Cooperative Extension Service, and the Division of Natural Resources. With the help of these agencies and other volunteer help, the event ran very smoothly. The students listened intently and found out that learning in the wilderness can be a great adventure.

First Place Winners: Mrs. Diana Callahan's Class

Second Place Winners: Mrs. Pat Gauly's Class

Third Place Winners: Mrs. Kathy Terry's Class

Other fourth grade classes participating were: Miss Sandra Way, Mr. Brad Phillips, Mr. Paul Willhouse, and Mrs. Carol Ruark.

Submitted by: Saraellen Peters, District Coordinator

Contests

WELCOME

CLASSES OF WAY, CALLAHAN, AND PHILLIPS - load lunches, blankets, etc. into truck.

EACH SESSION WILL BE 20 MINUTES - 15 MIN PRESENTATION, 5 MIN TEST.
SESSIONS WILL BEGIN WITH 1 HONK (TIMEKEEPER BOB WEHRMAN)

TESTING WILL BEGIN WITH 2 HONKS

END OF SESSION - 3 HONKS AND MOVE TO NEXT STATION

PLEASE LISTEN TO SOUNDS OF NATURE AND KEEP TALKING TO MINIMUM

BE ATTENTIVE TO PRESENTERS AND THANK THEM WHEN SESSIONS ENDS

PRESENTERS TODAY ARE:

- Lenny Farlee, DNR - Tree Planting
- Allen Royer, DNR - Forestry
- Dean Zimmerman, DNR - Wildlife
- Michael Dorsett, Div. of Fish Mgmt. - Aquatics
- Bob Koenig, DNR - Plants
- George Seketa, DNR - Prairie
- Barry Fisher, NRCS - Soils

WHILE TAKING THE QUIZ - GIVING OR RECEIVING INFORMATION FROM ANOTHER TEAM IS NOT ALLOWED. IF YOU HAVE TROUBLE UNDERSTANDING A QUESTION YOU MAY ASK YOUR TEACHER OR GUEST PARENT TO HELP EXPLAIN THE QUESTION TO YOU. THERE ARE EXTRA PENCILS AT EACH STATION.

PORTABLE TOILETS ARE LOCATED AT THE FRONT AREA AND NEAR THE WILDLIFE STOPS AND PRAIRIE AREA.

LUNCH WILL BE AFTER SESSION 4 - PLEASE COME TO THE FRONT JUDGING AREA FOR LUNCHES

Contests

THE FIRST SESSION BEGINS AT 9:40 WHEN YOU HEAR THE FIRST HONK!

_____	GUIDE FOR WILLHOUSE - GO TO WILDLIFE
_____	GUIDE FOR RUARK - GO TO AQUATICS
_____	GUIDE FOR TERRY - GO TO PLANT
_____	GUIDE FOR GAULY - GO TO PRAIRIE
_____	GUIDE FOR WAY - GO TO SOILS
_____	GUIDE FOR CALLAHAN - GO TO TREE PLANTING
_____	GUIDE FOR PHILLIPS - GO TO FORESTRY

OWL TRAIL NATURE BOWL TEAM SCORE CARD

TEAM _____
CATEGORY _____ SCORE _____

TREE PLANTING _____
FORESTRY _____
WILDLIFE _____
AQUATIC _____
PLANT _____
PRAIRIE _____
SOILS _____

Contests

SCHEDULE OF PRESENTERS

TREE PLANTING - LENNY FARLEE

9:30 - 9:50 Class 1
10:00 - 10:20 Class 7
10:40 - 11:00 Class 6
11:10 - 11:30 Class 5
12:10 - 12:30 Class 4
12:40 - 1:00 Class 3
1:10 - 1:30 Class 2

PRAIRIE - GEORGE SEKETA

9:30 - 9:50 Class 6
10:00 - 10:20 Class 5
10:40 - 11:00 Class 4
11:10 - 11:30 Class 3
12:10 - 12:30 Class 2
12:40 - 1:00 Class 1
1:10 - 1:30 Class 7

FORESTRY - ALLEN ROYER

9:30 - 9:50 Class 2
10:00 - 10:20 Class 1
10:40 - 11:00 Class 7
11:10 - 11:30 Class 6
12:10 - 12:30 Class 5
12:40 - 1:00 Class 4
1:10 - 1:30 Class 3

SOILS - BARRY FISHER

9:30 - 9:50 Class 7
10:00 - 10:20 Class 6
10:40 - 11:00 Class 5
11:10 - 11:30 Class 4
12:10 - 12:30 Class 3
12:40 - 1:00 Class 2
1:10 - 1:30 Class 1

WILDLIFE - DEAN ZIMMERMAN

9:30 - 9:50 Class 3
10:00 - 10:20 Class 2
10:40 - 11:00 Class 1
11:10 - 11:30 Class 7
12:10 - 12:30 Class 6
12:40 - 1:00 Class 5
1:10 - 1:30 Class 4

AQUATIC - MICHAEL DORBETT

9:30 - 9:50 Class 4
10:00 - 10:20 Class 3
10:40 - 11:00 Class 2

Contests

AGENDA FOR OWL TRAIL NATURE BOWL

9:00 a.m.	Arrive O.W.L. Trail
9:30	Welcome
9:40	Begin First Round
	15 minutes - Presentation
	5 minutes - Test
	10 minutes - Travel to next station
10:10	Second Round
10:40	Third Round
11:10	Fourth Round
11:30	LUNCH
12:10	Fifth Round
12:40	Sixth Round
1:10	Seventh Round
1:45	DEPART

Contests

August 27, 1996

Randy Hayes
6874 E. US Highway 40
Fillmore, IN 46128

Dear Randy,

The Putnam County SWCD is sponsoring another "Nature Bowl" on September 24 and I was wondering if you could have 7 students to be guides for each of 7 4th grade classes that will be attending the field day at O.W.L. Trail.

I have enclosed an agenda and time schedules. Class size will be approximately 22 to 25 students per session. The students will be divided into teams of 4 or 5 students and will take a test in each session. After the guide escorts the class to their next session they will need to bring the test papers to the judges for grading.

The Guides will need to arrive at O.W.L. Trail by 8:30 so that they can become familiar with the area. Please tell the students to bring a sack lunch. There is water at the site and the SWCD will furnish soft drinks for lunch. The students will want to dress comfortably (jeans will be the best attire) and be sure and use insect repellent. A rain date has been set for September 26.

If you will, please get back with me to let me know if you can arrange for the students to be at the field day by calling 653-5414 or 7454.

Sincerely,

Saraellen Peters

Contests

August 22, 1996

Barry Fisher
NRCS District Conservationist Extraordinaire
64 N. US Hwy. 231, Rm. 2
Greencastle, IN 46135

Dear Barry,

Thank you for consenting to be a Soils Presenter for the O.W.L. Trail 4th Grade Field Day on September 24. Enclosed you will find the agenda and schedule for Presenters. I will need your test questions and answer key by Tuesday, September 17, so there will be adequate time to duplicate the material for the contest. You may fax the material to me at 317 653-4006 or 317 653-5279. Test questions should be on the material you cover during your presentation and should be limited to 10 multiple choice questions with 4 possible answers to choose from. (Example: Approximately what percentage of Indiana's wetlands have been drained?
a. 30% b. 50% c. 65% d. 80%).

There will be 155 students participating in the "Nature Bowl". Session size will be approximately 22 to 25 students per session. The students will be divided into teams of 4 or 5 students and will take the test as a team.

You will want to arrive at O.W.L. Trail by 8:30 to get set up at your stop. Please bring a sack lunch their next session they will need to bring the test papers to the judges for grading.

The Guides will need to arrive at O.W.L. Trail by 8:30 so that they can become familiar with the area. Please tell the students to bring a sack lunch. There is water at the site and the SWCD will furnish soft drinks for lunch. The students will want to dress comfortably (jeans will be the best attire) and be sure and use insect repellent. A rain date has been set for September 26.

If you will, please get back with me to let me know if you can arrange for the students to be at the field day by calling 653-5414 or 7454.

Sincerely,

Saraellen Peters

Demonstrations

Polly Ped

Topic/Subject Area: Soil

Audience Size : All ages

Summary: “What is conservation?” and “Why soil is so important.”

Description: Hi! My name is Polly Ped and I’m from _____ County Soil and Water Conservation. How many of you know where _____ County is?

Now, I know what you’re thinking - Polly Ped, what a silly name, not to mention the box I’m wearing or the rocks in my head, er, hair.

Well, a ped is a little clump of (hold up a handful of soil)... No, not dirt! It’s soil. Dirt is what you get on your clothes or track through the house on shoes. Soil is what is in a garden and is used to grow.....(plants)

Many subsoils in Indiana are blocky, others are granular or platy. I am like this clump of soil, (point to ped chart) I’m long and thin, like a column.

I’m here to tell you about soil conservation.

Have you ever heard of the word conservation? Even though you may have never heard of it, I’ll bet most of you have practiced conservation. How many of you turn off the lights (hold up a light bulb) in your bedroom when you leave? When you do, you are... (saving energy.)

Another name for saving energy is “conserving” energy.

Likewise, when you turn off the faucet while brushing your teeth you have..... (saved or conserved water.)

So what do you suppose it means to conserve soil? (save the soil)

Save soil?! From what? (Erosion, pollution from gas/oil, compaction, etc.)

And why is soil so important? (Because plants grow in it)

And what do plants give us? (Answer: oxygen and food)

In fact, everything we eat comes from a plant, and I brought a plant to prove it. (hold up cheeseburger)

What is this?? (bun) And what is it made from? (flour) That comes from (?) (wheat) That grows in the(soil) No, not dirt!

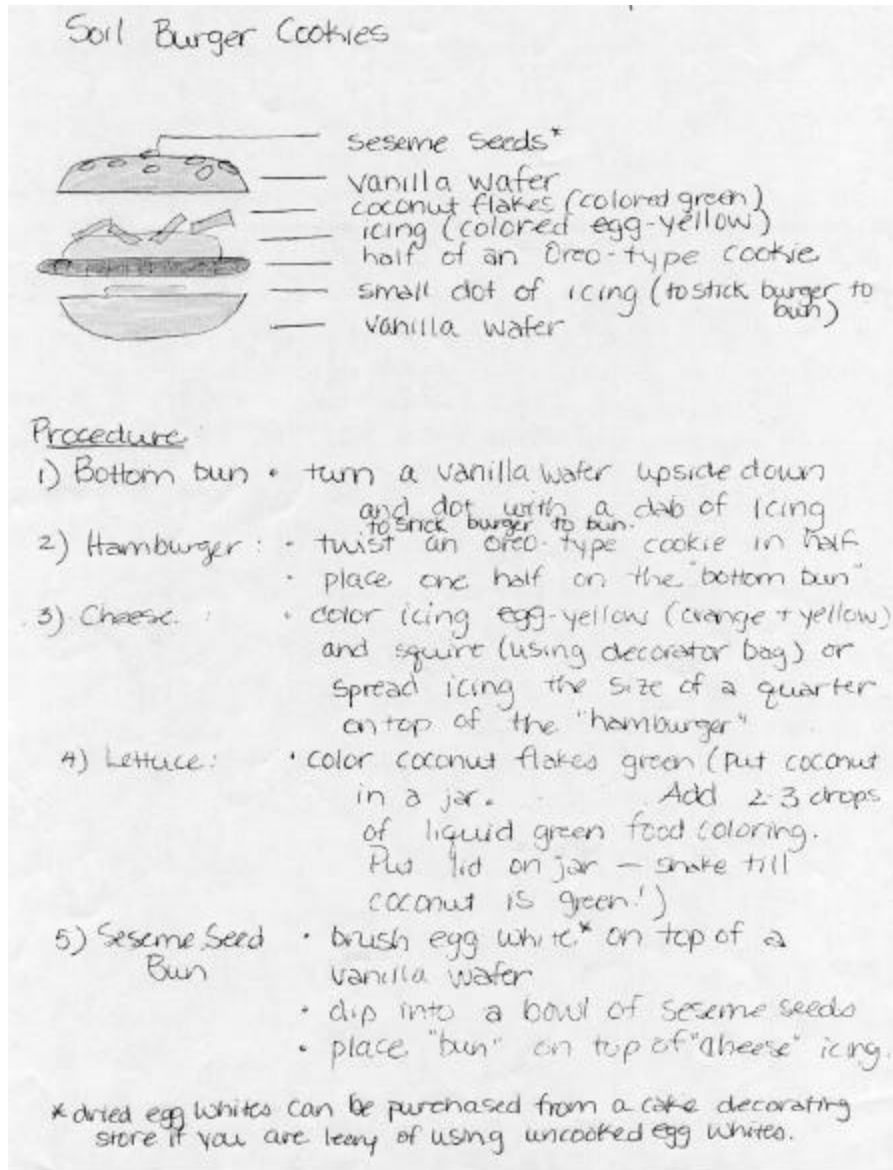
Demonstrations

This is (lettuce, pickles, tomato, hamburger, cheese) that comes from

(Reassemble hamburger and hold up) So, how many of you think I have a plant in my hand?
No, silly kids, it's a cheeseburger!!

But everything in this cheeseburger goes back to a plant - that was growing in the soil. So maybe we should call it a Soil Burger!

Are cheeseburgers the only food that comes from plants? (No) Do cookies come from plants? (Yes) Everything in this cookie come from a plant. The nilla wafer is made from that came from that grows in the..... The icing is made ofthat came fromor sugar beets that grew in the, the "lettuce" is really coconut that comes from athat grew in the, etc.



Demonstrations

Jethro The Scarecrow

Topic/Subject Area: Soil

Target Audience: Elementary - K-4

Description: Introduce yourself and tell them that their teachers asked you to talk to them about the environment, conservation, farming, and food. Ask them if they know that food is? Farming? Environment? (everything in the world, plants, soil, water, air, animals, school, home, stores, etc.) Conservation? Explain it is the wise use of our environment.

Ask them what many farmers like to use, but take care of. Answer - soil.

What grows in the soil - plants.

What do plants give us - oxygen and food.

I explain everything we eat comes from a plant . They disagree. I brought a plant to prove it because kids do not always believe us scarecrows. Enter the burger or plant. Go through the burger piece by piece and where it comes from. The cheese and meat are tricky. These are fancy plants. Relate them back, cheese to milk, milk to cow, cow to plants.

When finished with everything, I like to hold up the burger and ask them how many of them think I have a plant in my hand, then say, “Silly kids, it’s a cheeseburger.” But you know that we really could call it. Everything in this cheeseburger goes back to a plant that was growing in the_____. So we should call it a Soil Burger.

I then say, “Can you see why my farmer likes to take care of the soil?. But shouldn’t we all be taking care of our earth?” Ask them how. Add some of your own. “Well I have to get back to the corn field.”

Have fun. Have the students answer your questions; keep them involved. Add your own style and thoughts. This is just an outline to get you started. Remember, your cousin from the Wizard of Oz did not think he had a brain; if he could think, he obviously had a brain, silly cousin.

Materials Needed: Coveralls, flannel shirt, hat, burger (from Toys-R-Us or other toy store), raffia for straw, duct tape, and Velcro.

1) Cut raffia to desired length and place on duct tape, place another piece of tape on opposite side for complete holding. 2) Place Velcro on costume (leg holes, bib of overalls, arm holes of shirt and inside hat). 3) Cut duct taped raffia to proper length and Velcro, place in costume.

Preparation Time: Approximately two (2) hours.

Demonstrations

Submitted By: St. Joseph County Soil and Water Conservation District
Contact Person: Rick Glassman
60455 U.S. 31 South - Suite 4, South Bend, IN 46614-5137
Phone: (219)291-2300

Displays

Stream Exhibit (County Fair)

Topic/Subject Area: Water Quality

Target Audience: General Public

Audience Size: Annual fair attendance averages 300,000.

Summary: A stream emerging from a field stone waterfall flows to a shallow wetland pond on the Elkhart County SWCD fair exhibit site. We set this stream up each year and use it to attract the attention of fair goers. The first year we included 2 cow-powered pumps (one for the calf, one for the crowd), fencing and a calf to emphasize “Keep Livestock Out of Streams”. This year we plan to use the “Backyard Conservation” materials to show that the nine best management practices for agriculture can be adapted to anyone’s backyard.

Description: Our slightly sloping site is ideal for this exhibit. After locating power cables with the Fair Board Staff, we excavate the shallow wetland on the northeast corner of our site. Because our site is a “nine day wonder” we use a child’s wading pool for our wetland bottom. Once the pool is installed and leveled, we cover the grass around the pond and that which will be under the stream bed with a tarp or plastic to make the sand easier to remove when we move out. Placing the recirculating pump is done next. We put the pump behind our tent to soften the noise of the pump and to keep it close to our electrical source. A garden hose is curled around the bottom of the wetland and run on top of the tarp to the pump. We put a piece of screen on the other end of the hose that is in the wading pool to keep debris out of the pump. Another piece of hose on the pump is the out flow. It is put near the waterfall area so that it can be hidden in the waterfall.

The tarp that forms the stream bottom and sides is covered with sand. We lay it out so it looks “natural”. Our stream bed is about 3 - 4 feet wide and 1 1/2 - 2 feet deep at this point (remember that you’ll lose width and depth when you cover it all with washed gravel). We include a shallow pool with a waterfall between the main waterfall and the bridge to add interest. It also allows us to fine tune the flow with field stone (more stone dam, more retention, less dam, faster flow).

When we have the sand arranged to suit us, we cover the streambed and sides with plastic. This holds the sand in place and keeps the water from leaking out. Be sure the plastic extends into the pool so you don’t have a leak. The plastic is hidden with rocks and gravel. Now it is time to start placing field stone in and around the bed. We move it around until it suits us. Someone is usually building the waterfall while others are working on the stream bed. A good supply of field stone really helps! Flat rocks don’t work everywhere, and you need quite a few of them. If you are in limestone country, that might be the route you want to take, but we like field stone, have plenty, and all we have to do is haul it in and out.

Displays

Once you have the key big stones in place on the edges, the plastic is covered with washed gravel in the streambed. We also cover the bottom of the wading pool with washed gravel and line the sides and edges with rock so the plastic doesn't show. Depending on how much help you have, these jobs can be done in steps or simultaneously. Usually at this point someone starts with wood chips to smooth down the outside edge of the stream to blend it in with the surroundings. We put potted flowers into the mulch to make it look like we landscaped our stream. (I plant some of my flowers at home in plastic trays with drainage holes and dig them up for the fair. I hate to buy flowers for nine days, and if you wait until fair time, you can't find any flowers anyway.)

Once the waterfall is constructed to everyone's satisfaction and the gravel is in the stream bed, we add water and see what happens. We fill the wading pool with water and then turn on the pump. As it pulls water out of the wading pool the stream begins to flow. We don't shut the water off until the wading pool is full again and the stream is running full. Now is the time to get the arrangement right. Flat rocks overhanging drops make lovely mini falls. They look and sound good. A tall rock sticking up in a "dull section" will break the flow and look nice. Just play around with it until you are satisfied!

Washed gravel usually isn't clean. After the water has circulated through a few times, it looks pretty muddy, so we detach the hose and water the grass rather than pump it through the waterfall to the stream. When we shut the pump down for the night, the pool overflows and that waters the flowers close by. The next morning we start the pump and add water until everything balances out again. If it is really hot and dry, we sometimes need to add water in the afternoon.

Finishing touches include: arranging flowers around the pool and edges of the stream, adjusting the water flow "just so", and placing the foot bridge across the stream. We use wood chips to make a path that crosses the bridge. We have a large banner that says: Elkhart County Soil & Water Conservation District "Downtown or Down on the Farm: We Can All Practice Backyard Stewardship". This is against the building behind us.

This year we are going to put a wood duck house in the wetland pond and include other bird houses, a bird feeder, a bat house, and a butterfly shelter in the display to show how you can landscape your back yard for wildlife habitat. We can also cover tree planting, backyard ponds, backyard wetlands, and mulching with the display. We will have information on composting, nutrient management, terracing, water conservation and pest management in the information tent.

We always include plenty of lawn chairs so folks can sit and talk for awhile. Our booth is in a nice shady area close to the picnic tables in the park and Young McDonald's Farm. We have lots of young families and folks who know us and visit every year, plus we always meet many new people.

Materials Needed: Booth space, child's wading pool, sand, gravel, wood chips, recirculating pump, hose, electricity, tent, foot bridge, flowers, field stone, information on Backyard Conservation.

Displays

References/Other Supporting Materials: Any gardening book that covers water gardens will help (i.e., *Woodworking for Wildlife* and *Landscaping for Wildlife*, from the Department of Natural Resources books. (Call the Minnesota Book Store 1-800-657-3757 to order.)

Preparation Time: 2 or 3 good days.

Presentation Time: For an individual, anywhere from 5 minutes to an hour, depending on how involved they get. Actual time of presentation: the nine days of the Elkhart County 4-H Fair.

Handouts Used: This year we are giving away a variety of prizes that promote backyard conservation. We are making a wheel to spin to see what you win. Prizes will include: bird houses (including bluebird and wood duck), bat houses, butterfly shelters, Minnesota's *Woodworking for Wildlife* and *Landscaping for Wildlife*, NACD cartoon booklets, district refrigerator magnets, Backyard Conservation booklets, games, and other materials.

Follow up: This usually depends on what contacts we make. Sometimes follow up is a farm visit by the technical staff, sometimes it is a relationship with a "new" teacher. Whatever it takes to assist in the request the new contact generates.

Community Action Ideas: I'm sure at least one garden pond has been installed after seeing how easy it is. Again, actions are as varied as the people we contact. This exhibit is popular with teachers, and can lead to development of outdoor classrooms on school sites.

Costs: WOW! That really depends. Our booth space and tent cost us \$634.00 this year. The pump was about \$150.00, sand and gravel are usually donated, and a \$15.00 wading pool lasted two years. We borrow my flowers and field stones, but usually purchase about \$20.00 worth of flowers for the site in early spring. The bridge cost about \$100.00 the first year, but now we own it. Cost really depends on what exhibit costs are and how much you can get donated.

Submitted by:

Elkhart County Soil & Water Conservation District
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Water Quality in Hamilton County (or your county)

Topic/Subject Area: Water Quality

Target Audience: General Public

Audience Size: Any size

Summary: This exhibit gave the results of well and stream testing in Hamilton County. The actual testing was done by Heidelberg College.

Description: This display was done jointly with the Hoosier Heartland RC & D through a grant received by the RC & D. The Hamilton County SWCD staff helped collect the information. Random testings of well water was the first priority of this project. Water was collected and sent to Heidelberg College where it was tested for conductivity, sediment and pH. They tried to get a broad sampling across the county. Also information such as the history of the well, the soil types and the depth were taken into account with the results. After the well testing was completed there were funds left over. Stream testing was done with the remaining funds. The display was done on a Downing display with a blue background. Printed reports of the test findings from Heidelberg College were arranged on the display board. An aquarium filled with fish caught locally was set in front as an attention-getter which attracted people to look at the display.

Materials Needed: 35 gallon aquarium, aerator and accessories, fish caught locally, Downing display, results from water testing.

References/Other Support Materials: This testing was done in several counties involving RC & Ds, Farm Bureau, Inc. and Purdue Extension. More information may be obtained at one of these offices.

Preparation Time: 3 - 4 days.

Presentation Time: This can be a self-standing display, or can be manned with someone to answer questions.

Handouts used: Results from well testing and other related literature on hand.

Costs: Our aquarium was donated. The cost of a 35 gallon tank, aerator and accessories can be purchased for \$70.00 to \$100.00. If you catch your own fish, the only cost is your time. If you purchase fish, the price varies depending on what you buy.

Submitted by:
Hamilton County Soil & Water Conservation District
Mark McCauley

Displays

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Noblesville, IN 46060
(317) 773-1432
in390!mmccauley

Soil Monoliths

Topic/Subject Area: Different types of soils

Summary: Use soil monoliths in your district office or as a 4-H Fair display to educate people about soil.

Description: A soil monolith represents a vertical slice of soil in its natural position. This display shows the different types and layers of soil in a metal tray (monolith). Printed material may be obtained from soil scientists or the Purdue Extension office in your county.

The following steps describe how to make a mini monolith and were obtained from an agronomy guide (classification AY-234) at the Cooperative Extension Service.

Step 1. Dig a pit 4 feet deep or preferably find a roadcut or construction site that contains the particular soil feature you wish to demonstrate. The soil should be moist enough so it does not crumble when removed. If too dry, moisten it by spraying with a garden sprayer.

Step 2. Identify each of the soil horizons. Horizons are the layers of soil that differ from one another in texture, color, acidity (pH), soil structure, etc. Measure and mark the horizon boundaries.

Step 3. Select the correct cutter to use for each soil horizon - i.e., one which is one-fourth the horizon depth. For example, if a horizon is 6 inches deep, a 1 1/2 inch cutter would be used. Don't forget, a set of horizon samples must add up to the length of your monolith tray (display box).

Step 4. Beginning with the top horizon (then later repeating the procedure for each horizon in the profile), gently tap the cutter into the approximate middle of the horizon with a rubber mallet until it is flush with the face of the soil pit. If the cutter is driven too far, it will compact and reorient the natural soil structure.

Step 5. Remove the soil-filled cutter first by trimming around it with the knife, making sure all roots and soil are cut, then by prying it carefully from the pit face.

Step 6. After the cutter is removed, scrape off excess soil from around the edges of the cutter and from the open end.

Step 7. Now place the cutter in the monolith tray and with as little pressure as possible, push the soil out by pressing down on the backplate with the thumbs and on the flanges on the sides of the cutter with the forefingers. Then, gently remove the backplate from the soil surface. (If soil is sticking to the plate, removing it carelessly could pull too much soil off with it.)

Step 8. Using the knife, pick at the surface of the completed monolith to eliminate the gaps between the horizons and to restore the soil's natural appearance. Do this while the soil is

Displays

still slightly moist; if too wet, allow it to dry somewhat before picking. Experience will be the best guide as to proper moisture content.

Step 9. After allowing the soil to air-dry, pour on enough fixative to fill the pores but not cover the surface. This seals and hardens the monolith and gives it a moist, natural look. Immediately wipe off any fixative that gets on the wooden frame.

Step 10. Once the fixative has dried completely (approximately 24 hours), paint the outside edges of the tray a pale yellow. This color enhances the natural soil color and makes the monolith more realistic in appearance.

Step 11. Finally, label the various horizons. These can be either the descriptive names like 'topsoil', 'subsoil' and 'parent material', or the A, B, C horizons designation used by soil scientists who classify and map soils.

Materials needed: A monolith tray (display box), metal soil sample cutters (can be obtained from an NRCS soil scientist), a ruler or yardstick to measure horizon depth, a rubber-headed mallet, a knife, a fixative or hardener (Johnson Floor Wax or any acrylic-based floor wax, or a polyurethane varnish), paintbrush and paint preferably pale yellow (optional).

References/Other Support Materials: . Guidelines for making the monolith trays are available from the Purdue Extension Service and the 4-H handbook for the Soil & Water Conservation project, Level D. A soil scientist would be able to help and/or guide you as well. Your county soil survey book can describe the different types of soils.

Preparation Time: This will take several days to collect the soil, preserve it, and mount and label each monolith.

Submitted by:
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Noblesville, IN 46060
(317) 773-1406

Displays

Model Farm

Topic/Subject Area: Soil Erosion

Target Audience: Variable

Audience Size: 30 max.

Summary: A 4' x 4' display was constructed to show farms with and without conservation practices. This display can be used for a variety of different presentations. This has been a good attraction at the county fair. One drawback is the display's size. Because of the weight and size, it is a 2-person operation to set up.

Description: The frame is made of wood and the interior is made of styrofoam. The conservations are modeled in the display. We use running water to demonstrate how the conservation practices work. On the farm without conservation practices, we show the consequences of running water.

Preparation Time: 100 hours to build.

Costs: \$500.00

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Displays

Water Flow Model

Topic/Subject Area: Hydraulics

Target Audience: Land users, contractors, pond owners

Audience Size: 20

Summary: A device was constructed to show the hydraulic effects of different pipe inlets, outlets, pipe slope, animal guards, terrace risers and tile inlets. This display is heavy and requires 20 gallons of water. It is not easy to transport.

References/Other Support Materials: EFM Chapter 6

Preparation Time: 100 hours to build

Presentation Time: 20 minutes

Costs: \$600.00 for materials

Submitted by:
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Pizza Conservation Display

Topic: This display will inform the public about the importance of soil for growing food.

Target Audience: Appropriate for all ages

Audience Size: Appropriate for small and large groups

Summary: The display shows “the roots” of pizza ingredients. Can be used as display or as visual during a pizza conservation program.

Description: The display is a table top display that describes the connections between the ingredients in a pizza and the soil. An artificial soil pizza can also be made to use as a demonstration.

MAKING THE DISPLAY

1. Make signs that read:
 - a. CRUST is made from WHEAT which grows in the SOIL
 - b. TOPPINGS come from VEGETABLES grown in the SOIL
 - c. SAUCE is made from TOMATOES which grow in the SOIL
 - d. SAUSAGE comes from PORK fed on CORN grown in the SOIL
 - e. CHEESE comes from COWS that graze on GRASS grown in the SOIL
 - f. SOIL CONSERVATION: our pizzas depend on it.
2. Create a banner that reads PIZZA CONSERVATION
3. Laminate all the signs and put pieces of velcro on the backs.
4. Create eye-catching props that can be mounted on the board with the signs. Examples include: stalks of wheat, plastic pepper, onion, tomato, ear of corn, pictures of a pig and cow, clump of grass, etc.

MAKING THE PIZZA

1. Create the pizza crust with spray foam insulation. Starting in the center of the cardboard, spray the foam insulation in a spiral until the edge of the circle is approximately two inches from the edge of the cardboard. Spray another layer on top of the last circle to form a lip on the edge of the crust. (CAUTION! The foam insulation will double in size, so make the crust smaller than you actually want it to be.) Let the crust dry for 12-24 hours.

Displays

2. While the crust is drying, cut pizza toppings out of play dough. Some suggestions are cheese, green peppers, onions, pepperoni, mushrooms etc. Lay these out to dry.
3. When the crust is dry, paint the inside with red paint. Let the paint dry.
4. When the paint is dry, arrange the toppings on the pizza.
5. Spray the pizza with clear acrylic spray to glue down the toppings and form a protective coating.

SET UP

1. Set up the table top display with three sides. Place the back side parallel to the long edge of the table. Have the right and left sides at an angle to the back.
2. On the left-hand side, put signs “a” and “b” and the corresponding props.
3. Place the PIZZA CONSERVATION banner on the top of the back section. Put the “SOIL CONSERVATION: our pizzas depend on it” sign below the banner.
4. On the right hand side, put signs “c,” “d,” and “e” and the corresponding props.
5. Lay the artificial pizza in front of the display.

Materials needed: Play Dough, foam insulation, red paint, knife, cardboard (preferably a large pizza box), clear acrylic spray, construction paper, plastic vegetables, wheat stalks, picture of a pig (or toy pig), and picture of a cow (or toy cow).

Preparation time: 6 hours preparation, 48 hours drying

Handouts used: pamphlet telling about soil conservation and it’s relationship to food production.

Community action ideas:

- Ask a local pizzeria to donate samples or coupons to pass out.
- Have a table of products that come from the soil and one product that is not connected to things growing in the soil. Have people guess and give a prize to the person that answers correctly. (Suggestions for products to include: natural make-up, broom made from broom corn, coffee, chocolate, soybean crayons, newspaper, honey, cotton shirt, a can of diet soda - this would be the one thing that doesn’t come from the soil.)
-

Costs: This display cost \$25.00, and Wal-Mart donated \$20.00 in products.

Displays

This display is also available for rent from the Southwind region by contacting Carrie Parmenter

Submitted by:

Southwind Region (Posey, Vanderburgh, Warrick, Spencer and Perry County SWCDs)

Carrie Parmenter, contact person


12445 N. Hwy. 41

Evansville, IN


(812) 867-0729

The Roots of Pizza


Crust is made from Wheat that is grown in the Soil.




comes from Cows which graze on the grass that is grown in the Soil.




Sauce is made from Tomatoes that are grown in the Soil.




Vegetable toppings come from Plants that are grown in the Soil.



Sausage is made from Pigs which are fed on the corn that is grown in the Soil.



Cardboard boxes comes from the Trees that grow in the Soil.



A GUIDE FOR SAVING OUR PIZZAS

Southwind Natural Resource Region

Your soil conservation partners include:

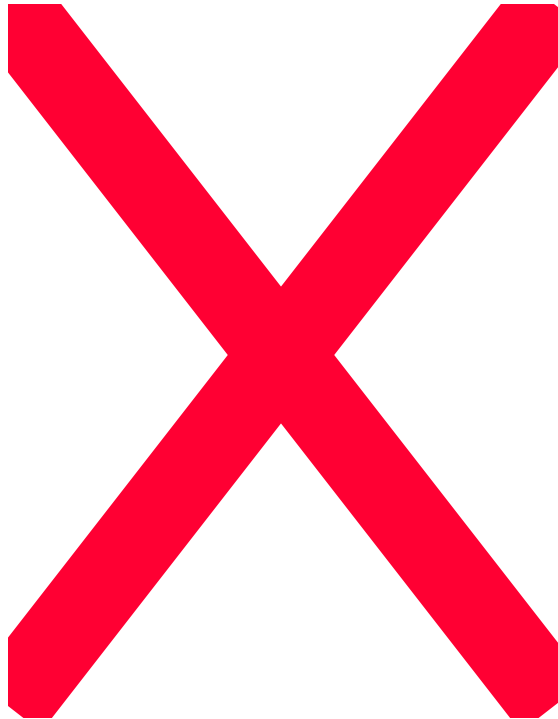
- IDNR - Division of Soil Conservation*
- Natural Resources Conservation Service (NRCS)*
- Resource Conservation & Development (RC&D)*
- Soil and Water Conservation Districts (SWCD)*

Offices and Phone Numbers

- Perry County 812-547-4686
- Posey County 812-838-4176
- Spencer County 812-649-9137
- Vanderburgh County 812-867-0729
- Warrick County 812-897-2840
- Four Rivers RC&D 812-354-6808
- Lincoln Hills RC&D 812-547-7028

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Displays



Putnam County SWCD Worm Tunnel

Topic: Earthworms in the Soil

Target Audience: Elementary students

Audience Size: 1 class at a time

Summary: The Putnam County SWCD recently built a “worm tunnel” display to demonstrate the importance of earthworms to the soil. The display was used during Ag Week for an all-county 4th grade field day held at the Putnam County 4-H fairgrounds.

Description: After giving the students “worm facts”, showing them a drawing of a soil profile, and talking about the benefits of conservation tillage, the students were invited to have a “worm’s eye view” of the soil.

Two 4’ x 8’ boxes were built out of tempered hardboard and framed with 2 x 4s. One tunnel represented “healthy soil” and one represented “damaged soil.” The underground activity of worms, animal, and insect life were painted as a mural on the inside walls of the healthy soil tunnel with iridescent paint so they would “glow” in the dark. Black lights provided the right effect and a heavy tarp over the boxes made the inside of the box dark.

The “damaged” soil tunnel did not glow, rather it demonstrated what erosion and poor land management can do to the soil. Rocks lined the floor along the walls to represent parent material and ropes hung from the healthy soil tunnel to represent root systems.

Students entered through the healthy soil tunnel first and exited out of the damaged soil tunnel. Lots of “cool” remarks could be heard!

The SWCD will use the worm tunnel display at the county fair this summer. Because of the size and weight of the tunnels, they are assembled when used and then taken apart to store.

Materials needed: 6 - 4’x8’tempered hardboard, 20 - 2x4 construction lumber, 1 or 2 gallons of paint (brown color) to prime hardboard, paint brushes and rollers, spray paint and acrylic paint, 1 1/2” and 2 1/2” screws, 1 - 12’ x 16’ tarp, 2 black lights, 1 regular light, plastic insects and worms (attach with stapler), handles to make carrying hardboard easier, and press on lettering for outside of display.

***Note:** Because of the weight of the display, you might consider using a lighter weight material, such as blueboard to make it easier to transport. Also, you may want to put plexiglass over the inside surfaces to protect your insects and visual effects from picky fingers.

References/Other Support Materials: The “Soil Ecosystem” overhead drawing in the *Stop, Look and Learn* Nebraska Resource Guide Book for 3-4 grade is a good guide to drawing the mural, adding worm tunnels, corn root systems, etc.

Displays

On a flipchart, I drew the soil profile that is demonstrated in the Nebraska resource guide to explain the layers of soil - topsoil, subsoil and parent material. I also used this when I drew the mural, to show the different soil layers. The little worm characters in the Nebraska book are cute to draw on a flipchart for your presentation and to draw on the outside walls of the worm tunnel.

Another reference is the Farmer's Earthworm Handbook to gather worm facts.

Preparation time: Approximately 40 hours

Presentation time: 15 minutes for talk, and another 10 minutes for tour of worm tunnel.

Handouts used: There weren't any handouts used, but this would be a nice addition to the program. The district is considering handing out cards for the students to take home and complete with their parents along with suggested activities. After completion, the student could bring it to the district office and receive a reward, such as a badge declaring them a friend of the district.

Costs: Approximately \$300.00

Submitted by:
Putnam County SWCD
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Displays

Quiz Board

Topic: Soil & Water Facts

Target Audience: General Public

Audience Size: 3 or 4 persons at a time

Summary: The Spencer County SWCD used this as a display at the 4-H fair. It consisted of a board with questions on the surface of a hinged panel with the answer revealed underneath when the hinge is lifted. These questions were generally about soil conservation. There was also a quiz for participants to take to test their knowledge about soil & water conservation.

Description: The quiz board was constructed by using a 32" x 40" piece of black mat board assembled on planks to keep it standing. In the middle of this was a poster distributed by NRCS that lists events that occurred during the past 500 years, the time it takes to create 1 inch of topsoil. Around the poster are 10 panels that are attached to the board by hinges so they can be flipped up. Each panel has a question printed on the front of it about soil. When the panel is flipped up, the answer is revealed.

There was also a quiz made up of 30 to 40 questions that deal with soil and water conservation and general facts. Each day a prize (we used t-shirts) was given to the highest scorer of each age group (12 and under, 13-19, and 20 and older).

The theme of the main display is water conservation. There are three basic texts with three corresponding posters. The texts are presented in size 28 font so that they can be easily read. This is displayed on a Downing Display board.

The display first tells about water and how much we have on earth. It touches on why we need to conserve and protect. It then goes on to explain the water cycle and how water is recycled. In conclusion, it tells why we need to conserve and how we can conserve.

On the middle shelf is a perpetual motion wave toy. The perpetual motion wave toy was not left unattended, because it did not belong to the district. On the sides of the display are fact sheets on water. The side panels are framed with blue ribbon and decorated with water droplets.

Materials needed: 32" x 40" piece of black mat board (can be found in art supply stores or college bookstores), construction paper, poster - In the Time it Takes to Create 1 Inch of Topsoil, a quiz about soil & water conservation, perpetual motion wave toy (optional), and printed text about water conservation.

Preparation Time: To type up text and create the quiz board, it took 3-4 days, setting up the display takes 1/2 hour or less.

Presentation Time: For younger children, taking the quiz took 15-20 minutes for older

Displays

children and adults it took less time. This display is mostly visual and there is no formal presentation.

Costs: The biggest expense was the prizes, which are optional. The cost of the display was approximately \$15.00 and the cost of the perpetual motion wave toy was \$50.00.

Submitted by:
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Displays

SAMPLES OF QUESTIONS ON QUIZ BOARD:

Sheet, Rill, and Gully are three types of what?

(Erosion)

The removal of minerals from the soil by the downward movement of water is called ____?

(Leaching)

True or False? Each Hoosier generates about 1/2 ton of solid waste per year.

(False – 1 ton)

Soil is made of a) air, b) water, c) organic material, d) minerals, e) all of the above.

(e, all of the above)

An acre of topsoil weighs 520 tons, 166 tons, or 10,000 pounds?

(166 tons)

Leaving the previous year's stubble on the soil is called _____?

(Conservation Tillage)

An acre of land is about 43,560: 75,640: or 106,280 square feet?

(43,560 square feet)

True or False? The darker the soil, the healthier the soil.

(True)

True or False? All organic wastes are safe to use on crop fields.

(False)

Are the different layers of the soil called sheets, zones, or horizons?

(Horizons)

Displays

SOIL & WATER CONSERVATION QUIZ

1. By tilling wet soil, is more residue buried? (Yes)
2. Can plant roots break up rocks? (Yes)
3. True or False? Not all watersheds are the same. (True)
4. If you disk or plow the ground before planting, are you no-till planting? (No)
5. What does CRP mean? a) Conservation Reservation Project b) Conserve/Respect/Protect
c) Conservation Reserve Program (c)
6. Who was one of America's early conservationists? a) Sharon Price b) Faberge Brute c)
Thomas Jefferson d) Bea Taylor (c)
7. Which is a nonpoint pollution source? a) pipe outlet from a malfunctioning sewage
treatment plant b) excess lawn fertilizer from a subdivision c) a septic tank outlet into a
stream. (b)
8. True or False? Over 69,989 types of soil have been identified in the U.S. by soil
scientists. (True)
9. True or False? Nonpoint water pollution does not come from a specific point. (True)
10. Which soil, topsoil or subsoil, contains the most nutrients? (Topsoil)
11. Is irrigation water management one of the ways to manage naturally occurring
pollutants? (Yes)
12. The Soil Conservation Service was created in what year? 1928, 1935, 1943, 1958, or
1969? (1935)
13. How much (avg.) topsoil is eroded from Indiana croplands each year? 1) 84 million tons
2) 45,000 tons 3) 5,000 tons 4) 1 million (1)
14. An acre of topsoil weighs 1) over 10,000,000,000 pounds 2) 49,780 pounds 3) 166 tons
4) 214,000 pounds. (3)
15. True or False? All pesticides are herbicides, but not all herbicides are pesticides. (True)
16. True or False? We can expect the use of a moldboard plow to leave less than 10%
residue cover (at planting) regardless of the previous crop. (True)
17. Yes or No? Can salts and minerals effect water quality? (Yes)

Displays

18. True or False? Filter strips filter sediment, pesticides, and other pollutants out of runoff and waste water. (True)
19. When it rains one inch, how much rain falls per acre? a) 12 gallons b) 27,000 gallons
c) 20 quarts d) 173,000 quarts e) 1,114,000 gallons f) 244 gallons (b)
20. What type of herbicide is most likely to cause pollution problems? a) contact, b) translocation, c) residual, d) speckled lysome (c)
21. In corn comparisons of chisel points, which would have the most remaining residue cover? a) 2 inch straight b) 3 inch helical c) 4 inch concave d) 4 inch twisted (a)
22. Of the following, which form of chisel point takes the least amount of horsepower to operate? a) 4 inch twisted b) 3 inch concave c) 2 inch straight d) 3 inch twisted. (c)
23. True or False? Soil that has washed into the water supply does not affect the water quality. (False)
24. True or False? Earthworms harm the soil in which they live. (False)
25. Why is it important for a person who receives benefits from USDA farm programs to know whether or not hydric soil exists on their farm? a) If hydric soils exist, there is a possibility the area could be a wetland that restricts what a farmer can do. b) Proper management of a soil requires the knowledge of how the soil is classified. c) it is not important. (a)
26. What does NRCS stand for? a) National Resources to Conserve Soil, b) Natural Resources Conservation Service, c) National Resources Crop Services. (b)
27. An acre of land is about a) 43,560 square feet, b) 75,640 square feet, c) 106,280 square feet. (a)
28. True or False? Filter strips are placed on the lower end of a field or adjacent to bodies of water. (True)
29. When is the best time to plant trees? a) early winter, b) early summer, c) early spring, d) early fall. (d fall)
30. The contracts for the CRP program last a) 1-5 years b) 5-10 years c) 10-15 years d) 15-20 years (c)
- .

Field Days/Tours

Fifth Grade Conservation Field Days

Topic/Subject Area: The day is planned to enhance the students' present science curriculum. The topics will provide an excellent introduction to subjects which may develop into more in-depth studies or research projects for some students.

Target Audience: All 5th grade students in Hamilton (or your) County

Audience Size: The students will stop at stations suited for 1 to 2 classes.

Summary: We attempt to address several different natural resource related topics with an emphasis on agriculture. The agricultural topics include food production, grains and livestock. Other topics include soils, forestry, nutrition, recycling, wildlife and more.

Description: The program consists of several stations the students stop at in a rotational system. We attempt to limit group size to no more than two classes at each station at a time.

Materials needed: This varies depending on what we present at the SWCD station. We supply signs for each station. The presenters at the remaining stations provide their own materials. When we had the opportunity to have BILLY B., the Environmental Song and Dance Man, at one of our Conservation Days we supplied a stage and a PA system for his performance.

Preparation Time: Preparation time varies for the spring and fall Conservation Days due to the fact that the Fall Conservation Days are soon after the students return to school from summer vacation. I normally start contacting presenters 60 days before the Spring Conservation Day and 120 days before the Fall Conservation Days.

Presentation Time: Originally we set presentations at 10 minutes each. Comments from teacher evaluations of the program consistently asked for more time at each station so presenters could slow down and still have time to answer students' questions. Teachers want their students to ask questions and they want the presenters to be able to respond.

Handouts Used: The NRCS and SWCD have excellent materials we have handed out to all students.

Follow Up: The program evaluations given each teacher before they arrive is important. Teachers may not return year after year if their opinions are not heard.

Community Action Ideas: We get a lot of direction and encouragement from our board of supervisors. They are mostly "agricultural oriented" so we have several agricultural stations. We feel a good mix of presentations is important.

Costs: Costs have varied from \$300.00 to \$6,000.00. The norm is \$300.00 to \$500.00 for lunches for the presenters and handout materials. Special guest presentations typically increases the cost.

Special Friends Field Days

Topic/Subject Area: Natural Resources

Target Audience: Special Education Students/Elementary

Audience Size: Three classes per day

Summary: Each fall, LaPorte County SWCD hosts two Special Friends field Days at a county park. Students rotate through three stations. In the past, the stations have been: gardening, pond study, and animals.

Description: The SWCD wanted to better serve the special education classes, so it decided to hold a field day for these students. This even gives the students an opportunity to get outdoor, hands-on experience. In addition, the students have a fun and educational day.

The students arrive at the park at about 10:00 a.m., rotate through three stations, and then are welcome to stay and eat lunch at the park. In 1997, the three stations were gardening, pond study, and animals.

At the gardening station, members of local garden clubs talk to students about various aspects of plants, including special information about things growing in the fall.

The pond study station is very popular. Each student dips a pond net into the pond to see what he or she can find living there. The students are amazed at what they can find. Park employees help identify the creatures the students find.

The animal station has varied over the years. In 1997, sheriff deputies from the county's mounted posse brought their horses and talked about their jobs and how to take care of horses. In previous years, local farmers have brought in livestock and other speakers have brought in and talked about a variety of wildlife. The idea is to have some kind of live animal for the students to see and learn about. The animals make a real impression.

It is important to give students plenty of time to rotate between stations and to make stations fun and attention getting.

As close to the start of school as possible, the invitations are sent out to the special education teachers. Teachers then call in to reserve a spot. Teachers are asked to make name tags for their students using a certain color of construction paper. Name tags help the presenters and helps keep track of students.

Presenters should be contacted several months in advance to make sure they have the days free. Clip boards are prepared prior to the event for teachers with schedules, also a park map and a list of presenters with addresses for thank you's. "Goodie Bags" (usually litter or trick or treat bags with the district's name on them) are filled with donated items like pencils, erasers, stickers, and/or bookmarks for each student.

Field Days/Tours

The program is over by noon, but the classes are invited to stay and eat lunch at the park. The district provides Kool-Aid for students to drink.

We are unable to re-schedule rain days, so we always hope for good weather.

Materials Needed: Paper for letters, schedules, and maps. Goodie Bags and items to put in them, clip board, location for field days, picnic tables, cooler, and Kool-Aid.

Preparation: Planning should start at least six months prior to the event.

Presentation Time: Three 30-minute sessions.

Costs: \$300.00

Submitted by:

LaPorte County Soil and Water Conservation District

Contact Person: Jill Presslet

Address: 100 Legacy Plaza West, LaPorte, IN 46350

Phone: 219-362-6633

Field Days/Tours

1997 SPECIAL FRIENDS FIELD DAYS SCHEDULE

Tuesday, October3:

Red Group:	10:10-10:40	Gardening/Joy
	10:50-11:20	Pond Study
	11:30-12:00	Wildlife
Green Group	10:10-10:40	Wildlife/Wanatah and Knapp
	10:50-11:20	Gardening
	11:30-12:00	Pond Study
Yellow Group	10:10-10:40	Pond Study/Crichfield
	10:50-11:20	Wildlife
	10:30-12:00	Gardening

Fifth Grade Conservation Field Days

Topic/Subject Area: Natural Resources

Target Audience: Fifth Grade Students/Elementary

Audience Size: Seven classes per day

Summary: For the past 15 years, the LaPorte SWCD has held Fifth Grade Conservation Field Days. The event has recently been extended from four to five days and is held in the county park. County students from public and private schools are invited to attend and rotate through seven stations: gardening, environmental games, soils, forestry, pond study, wildlife, and birds.

Description: Each year, about 800 fifth grade students, teachers, and volunteers attend the LaPorte Co. SWCD Field Days. The event is held at the county park, and park departments set up each of seven stations by setting up picnic tables.

Teachers are sent invitations in March, and the event is held the first week of May. Teachers are asked to mail in their reservations and are assigned a day on a first come, first served basis. They are then sent a confirmation letter with further instructions and details for their day at the park.

During field days, students arrive about 9:15 a.m. and all gather in a common area for a brief welcome. Then student leaders from an area middle school serve as trail guides to lead the groups to their stations. The groups return to the common area for lunch. Participants bring their own sack lunches, and we provide orange drink from McDonalds. Groups meet at the common area at the end of the day for a brief closing. Leaders rate group on behavior during the day and an award is given during closing to the class with the highest behavior score.

Sessions are about 25 minutes long with a five-minute transition time between sessions. We try to make each station, including birds, soils, wildlife, forestry, pond study, environmental games, and gardening, as interesting and as hands on as possible.

The bird station is staffed by members of the Potowatomi Audubon Society, who discuss the various aspects of birds. They usually present a slide show and demonstrate bird calls in addition to letting the students view birds in the nature center's bird viewing area.

Soil sessions are led by people from agencies such as the Extension Office, Department of Natural Resources (DNR), and USDA Natural Resources Conservation Service (NRCS). In the past, students have been asked to dig through "mini-landfills" to look at the rate of decay for various items and general overviews of soil with demonstrations and hands-on activities.

Field Days/Tours

A wildlife biologist or county park employee discusses a variety of wildlife topics and may have students participate in an activity at the wildlife station.

The forestry station is usually staffed by a DNR forester or an NRCS employee who discusses and shows different types of trees and the different types of tools a forester may use. Students have also been able to cut a “slice” of a log using an old-fashioned cross-cut saw.

At the popular pond study station, park staff show students how to use nets to dip into the pond to see what kind of pond life they can find.

A group of students from a local middle school leadership program leads the students in playing environmental games. Prizes are given to the students highest scores.

Members of local garden clubs discuss different fundamentals of gardening and usually give students a chance to plant their own flowers.

Prior to the event, it is important to find out if there is any special equipment that resource leaders will need. We also prepare clip boards containing schedules, a park map, a list of presenter addresses for thank you’s, an evaluation sheet, and a pencil for the teachers. Students receive “Goodie Bags,” a litter bag with the district’s name on it filled with donated items like pencils, erasers, bookmarks, and stickers. We have a class of disabled adults who help pack the 800 bags.

We are unable to reschedule rain dates, so we always hope for war, sunny days.

Materials Needed: Paper for letters, schedules, etc., items for “Goodie Bags,” behavior prizes, materials for station leaders, coolers and orange drink, morning refreshments for station leaders, and name tags.

Preparation Time: Station leaders should be contacted and planning should begin at least six months before the event.

Presentation Time: 25 minutes per group per station

Follow Up: Teachers often continue discussing topics presented at the field days in their classrooms.

Cost: \$650.00

Submitted by:

LaPorte Co. Soil and Water Conservation District

Contact Person: Jill Pressler

Address: 100 Legacy Plaza West, LaPorte, IN 46350

Phone: 219-362-6633

Field Days/Tours

FIFTH GRADE FIELD DAYS 1998 SCHEDULE

9:15-9:25	RED, ORANGE, YELLOW, GREEN, BLUS, PURPLE, PINK ORIENTATION – Picnic Area
9:30-9:55	Birds, Gardening, Games, Soils, Forestry, Pond, Wildlife
10:00-10:25	Gardening, Games, Soils, Forestry, Pond, Wildlife, Birds
10:30-10:35	Games, Soils, Forestry, Pond, Wildlife, Birds, Gardening
11:00-11:25	Soils, Forestry, Pond, Wildlife, Birds, Gardening, Games
11:30-12:30	LUNCH
12:05-12:30	Forestry, Pond, Wildlife, Birds, Gardening, Games, Soils
12:35-1:00	Pond, Wildlife, Birds, Gardening, Games, Soils, Forestry
1:05-1:35	Wildlife, Birds, Gardening, Games, Soils, Forestry, Pond
1:35-1:45	GATHER PACKETS AND DEPART (meet at Nature Center)

Field Days/Tours

A Day on the Farm

Topic/Subject Area: Agricultural Awareness

Target Audience: General Audience

Audience Size: First year attendance was 3,000.

Summary: The Elkhart County Ag Council decided most county residents had never been on a working farm. To remedy this situation, they developed a “Parade of Farms: similar to the one held in the Indianapolis area each year. One Saturday in September, the public is invited to visit six different farms in Elkhart County. Residents can visit one or all farms, and come and go as they please.

Description: Six different farms are selected by the A Day on the Farm Committee of the Ag Council. Because we are the largest dairy county in the state, our first year we featured two dairy farms, a vegetable farm, an apple and a peach orchard, a hog farm, and a seed corn operation. Each site had the support of the farm family and a site coordinator. Different ag organizations supported different activities on each site. Local youth organizations supported different activities on each site. Local youth groups and service organizations sell refreshments at each site. The SWCD was involved in three out of six sites and helped with a display on corn and soybeans and their many uses at the seed corn site and provided conservation information, including a soil pit on the hog farm. Official district involvement included the “Environmental Education on the Move” trailer at the orchard and the displays on conservation at the hog farm.

Materials Needed: For the hog farm display, we used our soil pizza for kids and the watershed cubes from the Wood-Land-Lakes RC&D. The soil pit is easy: a back hoe to dig a hole.

References/Other Supporting Materials: the Elkhart County Ag Council A Day on the Farm Committee can tell you more about the entire event. They can be contacted by writing yo\\to them through the Elkhart County/Purdue Cooperative Extension Service, 17746 County road 34, Goshen, IN 46528 or by telephone at 219-533-0554.

Preparation Time: One year for entire event.

Presentation Time: One day

Handouts Used: NACD cartoon booklets

Community Action Ideas: The Ag Council plans to make this an annual event.

Cost: Varies with the event

Field Days/Tours

Submitted by:

Elkhart County Soil & Water Conservation District

Contact Person: Nancy Brown, Program Coordinator

Address: 17746-B County road 34, Goshen, IN 46528-9261

Phone: 219-533-3630

Concord Fourth Grade Field Day

Topic/Subject Area: Natural Resources Conservation

Target Audience: Fourth Grade Students

Audience Size: Approximately 350 students, 14 teachers

Summary: A field day at Ox Bow County Park for all fourth grade students in the Concord School Corporation.

Description: A one-half day event for fourth grade students, covering natural resources and related 4-H projects. Five sessions are offered on soil, water, wildlife, forestry, and 4-H. Elkhart County Parks naturalists teach forestry and wildlife, the Conservation Partnership covers soil and water, and 4-H/Youth Extension educators lead the 4-H session.

Materials Needed: Five presentations and five presenters. Sometimes the morning participants bring their own lunches. This is up to the individual teachers.

References/Other Support Materials: Varies according to who is doing which presentation. Park and extension staffs provide their own materials. We recently have included soil mini-monoliths that we collected when soil scientists finished work for our new soil survey. We also cover the definition of soil and factors of soil formation in the soil session.

Preparation Time: Start early enough to get the event on the school schedule, usually about a year ahead of time for us. When we started this field day many years ago, the parks staff, Extension, and the SWCD went to the curriculum director at Concord schools and presented the idea to her. She liked it and we have had a field day every year since. We now coordinate dates with one of the building principals.

Presentation Time: Two half-days; sometimes it is two mornings and sometimes one full day, depending on school schedules.

Follow Up: As requested by teachers.

Community Action Ideas: this field day was the beginning of some excellent relationships. This is how I met one of our state conservation teachers of the year. We have had Project Wild and Project Learning Tree workshops for the Concord teachers. Concord South has developed a beautiful outdoor classroom since we started working together at the first field day.

Cost: Only that for supplies for the presentations, which will vary with presenters and the presentations.

Submitted by:

Field Days/Tours

Elkhart County Soil and Water Conservation District

Contact Person: Nancy Brown, Program Coordinator

Address: 17746-B County Road 34, Goshen, IN 46528-9261

Phone: 219-533-3630

Field Days/Tours

Fairfield Fifth Grade Field Day

Topic/Subject Area: Natural Resources Conservation

Target Audience: Fifth Grade Students

Audience Size: Approximately 200 students

Summary: A field day at the Fairfield High School outdoor lab for all fifth grade students in the corporation.

Description: A one-day event for all fifth grade students covering natural resources. Eight sessions are offered on soil, water, wetlands, wildlife, forestry, wildlife adaptations, wildlife habitat, and Native American Folklore. Four sessions are taught by resource professionals and four by high school students. This year, we used students from Fairfield's two Envirothon teams. Sometimes we use biology students or conservation class students.

Materials Needed: Eight presenters, eight presentations, a journal for each student with questions on each session. Students bring their own lunches and water is provided by a member of the outdoor lab committee.

References/Other Supporting Material: Soils: "Soil Sleuthing" from the Indiana 4-H Soil and Water Conservation Manual. Level A Water: "How Much Water is Available Demonstration" and "The Incredible Journey" from Project Wet. Wetlands: "Wetland Metaphors" from Project Wild and "Wet'n Wild" from "WOW! The Wonders of Wetlands," Project Wet. Wildlife: a good Conservation Officer! Our local officer always brings furs and the kids love it. "Birds and Worms" from Project Learning Tree and "The Thicket Game" from Project Wild. Wildlife Habitats: "How Many Coyotes Can Live Here?" which is an adaptation of "How Many Bears Can Live in This Forest?" from Project Wild. Native American Folklore: Because the outdoor lab is named after a famous local Native American named Onaxa, we tell his story and the story of the outdoor classroom. Then we incorporate literature into the day by telling the story of "How Grandmother Spider Stole the Sun." A version of this is in "Keepers of the Earth" by Michael J. Caduto and Joseph Bruchac. We then encourage the students to make up their own stories of why an animal looks like it does, or how something in nature came to be.

Preparation Time: Start early enough to get the event on the school schedule, usually about a year ahead of time for us. Meet with a committee of high school teachers because of the site and presenters and fifth grade teachers for their input. Once the event is routine, you need at least one day to train the high school students for their presentations and another day to prepare materials and books.

Handouts Used: Journals for students.

Cost: Other than supplies for presentations, which will vary with your presenter, just the cost of paper and copying for the journals.

Field Days/Tours

Submitted by:

Elkhart County Soil and Water Conservation District

Contact Person: Nancy Brown, Program Coordinator

Address: 17746-B county Road 34, Goshen, IN 46528-9261

Phone: 219-533-3630

Field Days/Tours

SAMPLE LETTER

To: Teachers/Session Leaders/Student Group Leaders

From: Mrs. Reagan, Mr. Allen, & Nancy Brown

Re: Fairfield Fifth Grade Field Day

Enclosed is your information packet for the upcoming fifth grade field day at the outdoor lab. We are looking forward to working with you this year.

The students are to bring their own lunches this year, so you will need to bring a lunch also. We will provide a big cooler of water and “bathroom-size” paper cups. If you prefer, you may have your students bring their own plastic or tin cups fastened on their belt loops.

Your schedules, name tags, information, and journal key are all included with this memo. We will give you a packet the day of the event that will include this memo, an agenda, a journal for each fifth grader, and a few extra pencils. Most of the students bring a pencil. We also plan to put an evaluation in that packet. Please complete it toward the end of the day and give it to Nancy to help plan next year.

We have planned to have eight groups, each one led by their classroom teachers. Please let Nancy know if this situation changes! We have two high school students available who could lead groups. If you do not send all four teachers and all students, please keep in mind that students will be leading the mixed groups and select the students for those groups carefully!

New Paris:	Mrs. Scheets-22 green	Mr. Haines-20 blue
	Mrs. Knafel-25 tan	Miss Wilbur-22 orange

Millersburg:	Mrs. Tinsley-24 purple	Mrs. Winkler-25 yellow
	Mr. Herschberger-24 red	Mrs. Line-25 white

If you have any questions, you may call Nancy at 533-3630, or Mr. Allen/Mrs. Reagan at 831-2184.

Field Days/Tours

SAMPLE

“Experiencing Onaxa*”

Fairfield 5th Grade Natural Resource Field Day

May 1, 1998

*Onaxa (pronounced On-a-sees) is the name of the last Potawatomi Chief in the Fairfield area. He was a great chief whose English name was Five Medals. His village was located west of Benton. He was a powerful chief and a friend of the great Miami chief, Little Turtle. The Fairfield outdoor lab was named “Onaxa Environmental Laboratory” in honor of this chief, because Native Americans lived in harmony with their environment and had very little negative impact on it. One of the objectives of the outdoor lab is to educate modern Americans to live in better harmony with their environment.

SAMPLE

Co-sponsors:

Fairfield community Schools – Bonnie Reagan and darrell Allen, Outdoor Lab Directors
Elkhart County Soil & Water Conservation District
Indiana Department of Natural Resources-Division of Soil Conservation
Indiana Department of Natural Resources-Division of Law Enforcement
Elkhart County Park and Recreation Department

Presenters:

Wildlife: Ken Wade, IDNR Division of Law Enforcement
Habitats: Courtney Franks, Elkhart County Park and Recreation Dept.
Forestry: Michael Culp, Jennifer Haag, and Lee Snider
Water: John Law, IDNR Division of Soil Conservation
Native American Stories: Nancy Brown, Elkhart Co. SWCD
Wetlands: Derek Adams, Mary Brown, Holly Wenger, and Jeanette Yoder
Wildlife Adaptations: John Culp, Joel Fry, and Micah Rogel
Soils: Kelly Hathaway, Luke Miller, and Amber Morehouse

SAMPLE

“Experiencing Onaxa*”

Fairfield Fifth Grade Natural Resource Field Day

May 1, 1998

9:00-9:05	Welcome & Introductions (football field bleachers)
9:10-9:40	Session 1
9:45-9:40	Session 2

Field Days/Tours

10:15-10:25	Break*
10:25-10:55	Session 3
11:00-11:30	Session 4
11:30-12:10	Lunch**
12:10-12:40	Session 5
12:45-1:15	Session 6
1:15-1:25	Break*
1:25-1:55	Session 7
2:00-2:30	Session 8
2:30	Dismissal

*Breaks are free play time. Group leaders will be responsible for their groups.

**during lunch the students will be the responsibility of the teachers. The student group leaders will get a break at this time.

SAMPLE (JOURNAL)

FRONT COVER
Fairfield 5th Grade
Natural Resources
Field Day
May 15, 1998

_____Name

FIRST PAGE

“Adaptations”

Name three predators and their prey:

1. _____prey on_____.
2. _____prey on_____.
3. _____prey on_____.

Which color “worm” was hardest to find? _____

Why was that color hardest to see? _____

What did you do to adapt when you were the prey? _____

PAGE TWO

“Ground Water and the Water Cycle”

How much of the earth’s surface is covered with water: A) 1/3 B) 2/3 C) ½

What is a watershed? _____

Field Days/Tours

Describe what can happen to water when it rains? _____

PAGE 3

Soils Site #1

Check One: ☐ field ☐ path ☐ wetland

Surface Observations:

How many different plants did you find? (Describe at least one plant.)

Did you see any animals or signs of animals?

Were there any signs that a human had been here?

List any man-made things you found.

Underground Observations:

What did you find underground?

What evidence of plants and animals did you find?

What color was the soil?

Was it moist? What was the texture of the soil?

PAGE 4

Soils site #2

Check One: ☐ field ☐ path ☐ wetland

Surface Observations:

How many different plants did you find? (Describe at least one plant.)

Did you see any animals or signs of animals?

Were there any signs that a human had been here?

List any man-made things you found.

Underground Observations:

What did you find underground?

What evidence of plants and animals did you find?

What color was the soil?

Was it moist? What was the texture of the soil?

PAGE 5

Soils Site #3

Check One: ☐ field ☐ path ☐ wetland

Surface Observations:

How many different plants did you find? (Describe at least one plant.)

Did you see any animals or signs of animals?

Field Days/Tours

Were there any signs that a human had been here?

List any man-made things you found.

Underground Observations:

What did you find underground?

What evidence of plants and animals did you find?

What color was the soil?

Was it moist? What was the texture of the soil?

“How Many Coyotes Can Live Here:

All animals need:

1. _____

2. _____

“How Many Coyotes Can Live Here:

All animals need:

1. _____

2. _____

3. _____

4. _____

5. _____

List the five kinds of food coyotes eat:

1. _____

2. _____

3. _____

4. _____

5. _____

Coyotes are: A) herbivores B) carnivores C) omnivores

PAGE 7

“Wildlife-Conservation Officer”

Name three mammals that are game species:

1. _____

2. _____

3. _____

Name three mammals that are non-game species:

1. _____

2. _____

3. _____

Field Days/Tours

Name three game species that are NOT mammals:

1. _____
2. _____
3. _____

PAGE 8

“Forestry”

Draw a simple leaf with a toothed edge:

Draw a compound leaf with lobed leaflets:

Draw a doubly compound leaf:

PAGE 9

“Wetlands”

List three reasons why wetlands are important:

1. _____
2. _____
3. _____

Write three words that are metaphors for wetlands:

1. _____
2. _____
3. _____

Name three animals that live at least part of their lives in wetlands:

1. _____
2. _____
3. _____

PAGE 10

“Wetlands”

Draw at least one of the micro invertebrates you saw in the wetland:

What would you name this creature? _____

What might it eat? _____

Field Days/Tours

What else did you observe about this creature? _____

PAGE 11

“Native Americans”

Draw a picture to illustrate one of the stories, or write your own story:

PAGE 12

“Scavenger Hunt”

(Just look. Don't touch. Some things you find may sting or bite, like nettles, poison ivy, or some insects. Write the name or a description of what you find, or draw a sketch to identify it. We are not collecting samples, just finding things!)

A simple leaf

A compound leaf

A leaf an animal has been eating

The oldest thing you can find

The youngest thing you can find

Something made by a person

Animals tracks

A decomposer

Something round

Something triangular

An insect

An arachnid

Field Days/Tours

Water Walk

Topic/Subject Area: Study of Pigeon Creek's ecosystems and wildlife

Target Audience: Second Grade at one elementary in Evansville

Audience Size: 80 students and 20 adults

Summary: the second graders experienced the wildlife in and around the creek during a nature hike and a seining demonstration.

Description: the SWCD staff and volunteers split the students into two groups and had two sessions occurring simultaneously. After the first session, the groups switched and the sessions were conducted again.

One session was the seining demonstration. At this station, the students watched SWCD staff and volunteers use a seine net to catch fish in the creek. These fish were identified and used to teach the students about the features of a fish. The students filled out an "Observation of the Soil and its Surroundings sheet" using the soil in the creek bed. During this session, the students learned about the wildlife living in the creek and the soil that makes up the creek bed.

The other session was a two-mile nature hike. The students learned to identify some of the plant species living along a creek and looked for signs of animals that use the creek. Along this walk, the students filled out another "Observation of the soil and its Surroundings Sheet" on top of the bluff to see the difference in soil along the stream bank and on the bluffs. The students also participated in a scavenger hunt. This session focused on the soil and wildlife around the creek.

Materials Needed: Seining net, clipboards, pencils, "Observation of the soil and its Surroundings" sheets, "Scavenger Hunt" sheets, brown paper bags.

References: Go FishIN! Crew Captain manual, "A Pocket Guide to Indiana sport Fish Identification" sport Fish Restoration, 1997; Audubon State Park naturalist.

Preparation Time: A couple of weeks to get all the people scheduled and the station mapped out and organized.

Presentation Time: Two one-hour sessions

Handouts Used: A pocket guide to Indiana Sport Fish Identification, prizes such as Backyard Stewardship "Wonders of Wildlife" posters for the scavenger hunt winners.

Follow Up: Do a classroom presentation on water pollution and its effect on wildlife living in and around a creek, do water quality testing on the creek, do art projects related to fish or creeks or write a poem or story about the experience.

Field Days/Tours

Costs: Paper and time if you already have seining equipment

Submitted by:

Vanderburgh County SWCD

12445 N. Hwy. 41, Evansville, IN 47700

812-867-0729

Contact: Carrie Parmenter

FIRST SAMPLE

OBSERVATION OF THE SOIL AND ITS SURROUNDINGS

WHERE

I GOT MY

SOIL SAMPLES

COLOR

WETNESS

SMELL

HOW IT FEELS

PLANTS IN

THE SOIL

OTHER LIVING

THINGS

DEAD THINGS

MAN-MADE

THINGS

SECOND SAMPLE

Field Days/Tours

SCAVENGER HUNT

- _____ 1. A flat rock
- _____ 2. Something that will last 100 years
- _____ 3. Some topsoil
- _____ 4. Something red
- _____ 5. Something shaped like this:
- _____ 6. Seeds
- _____ 7. A weed.
- _____ 8. Something that will go back to the soil.
- _____ 9. A pretty weed
- _____ 10. Something soft.

Field Days/Tours

Arbor Days Celebration (Held Last Week of April)

Topic/Subject Area: Arbor/Earth Days

Target Audience: K-grades

Audience Size: 5,000 participants

Summary: Programs are given at each school by naturalists, etc., with live animals and tree activities. Education coordinator does presentation on trees from Project Learning Tree, etc. and volunteers hand out tree seedlings and also portray Smokey and Woodsey Owl when possible.

Preparation: Tree seedling order form is filled out and sent to nursery prior to October 15 each fall. October/November SWCD Education Coordinator requests donations from area businesses to pay for tree seedlings and sends letters when Arbor Days will be held to each elementary principal and schedules presenters. In March, time schedules are typed and sent to principals for approval, costumes are reserved at U.S. Forest Service offices and volunteers (PTA/PTO members) are called. The week before Arbor Days, volunteers are scheduled, trees picked up at nursery, and final schedules are given to each teacher and school administrator, presenters and all volunteers and custodians or other personnel are contacted about needed services or items at each school. Three days prior to each program, presenters are contacted to see if they need anything for programs. Enough "How to Plant a Tree" and tree seedling information sheets are printed to give each student with their seedling. Seedlings are wrapped in wet newspaper and put in long donated plastic newspaper bags each Arbor Day before programs begin if possible.

Materials Needed: Seedlings, old newspapers, water source, pans for water, plastic newspaper bags, plastic gloves, something to cut seedling bindings, tarps or plastic to cover work tables, handouts, any items needed by presenters, lots of smiles, doughnuts, and coffee for energy.

References: Project Learning Tree books

Preparation Time: Six months

Presentation Time: However many hours or days it takes for each school.

Handouts: "How to Plant a Tree" and tree species information sheets

Follow Up: Thank you letters are sent to all presenters, volunteers and principals. Stories and photos and thank you letters are sent to local newspapers, radio, and cable TV stations.

Field Days/Tours

Costs: Depends on which species and age of tree seedlings you order from either of the state nurseries – Vallonia State Nursery (southern part of the state) or Jasper/Pulaski State Nursery (northern part of the state). I try to get as many items and labor donated as possible.

Submitted by:

Theresa Gabaree

Washington County SWCD

103 W. Westminster Center, Suite 115

Salem, IN 47167

812-883-3704

Field Days/Tours

Summer Tour

Topic/Subject Area: Farm, Equipment, and Conservation Practices

Target Audience: Local landowners

Audience Size: Limited to 50 for a bus load

Summary: We try to promote adult education. We had a presentation at Purdue Agronomy Farm, then traveled to Davenport, Iowa, to tour locks and dam on the Mississippi River. We also toured the John Deere Planter Plant and combine Plant and the Administration office where the Agronomist made a presentation on non-point pollution and precision farming.

Description: Adult education program on an Agronomy farm, locks and dams on the Mississippi River, how the John Deere Planter Plant and Combine Plants operate, and a presentation on non-point source pollution and precision farming.

Materials Needed: A bus and drinks and snacks for the bus trip.

References/Other Support Materials: the idea came from the Wayne County SWCD and the tours they sponsor. Our supervisors wanted to do something different, educational, and fun.

Preparation Time: You need enough time to advertise the trip, reserve a bus, and schedule the tour stops with the facilities and presenters.

Presentation Time: Depends on how long you want the tour to last.

Handouts Used: any educational materials relevant to the tour stops.

Follow Up: This brings local landowners and district people together to plan other events.

Community Action Ideas: Other ideas develop out of the tour.

Costs: Motel, \$1166; Coach, \$1457; Food, \$1624 (charged \$50 per person to cover food)

Submitted by:

Park County SWCD

RR 4, Box 291F, Rockville, IN 47872

Phone: 765-569-35551

Field Days/Tours

Farm Fair

Topic/Subject Area: Farming and Conservation

Target Audience: Fourth Graders

Audience Size: Classroom size groups (up to 30) for a total of around 380 students

Summary: Students visit a series of booths, hearing talks about different agriculture products and the importance of conserving our natural resources.

Description: By 8:45 a.m., fourth graders begin arriving at the Farm Fair. At 9:00 a.m., all groups have received their schedules for the day and have been directed to their starting points. From 9-11:00 a.m., students visit booths for about 10 minutes, changing booths at the sound of a whistle. Lunch is divided into two half-hour session for the large group. A catered lunch is provided for exhibitors. Booth rotation begins again at noon and continues until 2:00 p.m. when students return to school. Before leaving, teachers turn in optional evaluation forms that they completed during the day.

Materials Needed: A large indoor area for booths (ours was at 4-H fair grounds), barns and pens for animals, large area to serve lunch (exhibitors appreciated a quiet private area for them), signs identifying each booth, schedules for each teacher, tables and chairs for exhibitors and lunch, bags for students to carry handouts home in, lunches for students, teachers, exhibitors, volunteers.

References/Other Support Materials: Our farm fair was modeled after the Gibson Co. Farm Fair.

Preparation Time: Three months, but recommend six months.

Presentation Time: All day

Handouts Used: Schedules, evaluation forms, any handouts from exhibitors.

Follow Up: Review evaluations, thank you notes to all exhibitors, volunteers, and sponsors.

Costs: 425 hamburgers from McDonalds at 69 cents each for total of \$293.25; \$75.00 clean up fee for building; rental fees was waived; \$125.00 for catered lunches for exhibitors; 325 bags of potato chips at 25 cents each for total of \$81.25 (remainder were donated); \$25.00 for rental of rainfall simulator; 500 litter bags at 29 cents each for total of \$145.00; \$25-50.00 for miscellaneous supplies. Costs can be lowered by having sponsors donate funds or materials.

Submitted by:

Daviess County SWCD

Route 3, Box 434A

Washington, IN 47501

Field Days/Tours

SAMPLE

EXHIBITORS

Soils	Daviess County Master Gardners
4-H	Jane Ann Beard
Milk	Holland Dairy/Donna Mikels
Worm Lady	Debbie Haseman
Soybeans	Jan Jaselman
Product booth	Farm Bureau co-op
Corn	Heath Gardner
Trees	Jim Baines
Water Ecology	Tom Held
Surveying	Chuck White/Don Ryan
Pork	Charmae Kendall
Poultry	Perdue Farms/Tom Schafer
Rain Fall Simulator	Ken Eck
Wildlife	Bob Montgomery
Beef	Dale Allison
Dairy	Andy Stichfield

Demonstration Area:

Sheep Shearing	Bob Yoder
Horse Shoeing	Alva Raber

SAMPLE

AGENDA FOR THE DAY

8:45 a.m.	Arrive and go to starting point
9-9:10	Visit booths
9:15-9:25	
9:30-9:40	
9:45-9:55	
10-10:10	
10:15-10:25	
10:30-10:40	
10:45-10:55	
10:55-11:30	Group 1 Lunch
10:55-11:30	Group 2 Demonstration
11:30-12:00	Group 2 Lunch
11:30-12:00	Group 1 Demonstration
12-12:10	Visit booths
12:15-12:25	
12:30-12:40	

Field Days/Tours

12:45-12:55

1-1:10

1:15-1:25

1:30-1:40

1:45-1:55

1:55 p.m.

Free to Leave

SAMPLE

Daviess County Soil & Water conservation District
Route 3, Box 434A, Washington, IN 47501
Phone 812-254-1304 Fax 812-254-5314

Dear Fourth Grade Teacher:

We would like to invite you and your class to the first annual Daviess County Farm Fair, sponsored by the Daviess County SWCD and Cooperative Extension Service. What is the Farm Fair? The Farm Fair is a fun and educational event featuring booths and demonstrations relating to agriculture and conservation of our natural resources.

The Farm Fair will be held on Friday, October 17, 1997, at the 4-H fairgrounds, located at Eastside Park in Washington, from 9:00 a.m. to 2:00 p.m. Please arrive about 8:45 a.m. so you will have time to get to your starting point. Each class will spend approximately 10 minutes at each of the 16 booths, with five additional minutes for traveling between booths. Some booths will be outside (weather permitting), so please dress accordingly. When you arrive, please report to the main 4-H building to receive your schedule. Below is a general schedule of the day.

8:45 a.m.	Classes arrive and go to starting points
9:00-11:00	Classes visit booths
11-11:30	Lunch for Group 1
11:30-12:00	Lunch for Group 2
12:00-2:00	Classes visit booths

At the end of the day, buses will be loaded at the main 4-H building. Some details: Each class will begin at a different booth. In order for things to move more smoothly, a whistle will sound to signal the students when to move on to the next booth. Lunch will be provided for the students, teachers, and helpers – it will be served at the Community building at Eastside Park. The menu for lunch is: McDonald's hamburgers, chips, cookies, and drinks from Holland Dairy. While Group 1 is eating, group 2 will watch a demonstration on sheep shearing – then group 2 will have lunch while group 1 sees the demonstration. The registration deadline for the Farm Fair is Friday, October 3, 1997. Please complete and mail in the form below, or call Sally Christie or Toni Allison at the office at 812-254-1304.

Name _____ YES _____ We will be attending the Farm Fair.
SCHOOL _____ NO _____ We will not be able to attend.

Field Days/Tours

of students attending _____

of parent helpers _____ *This is up to you if you need them.

Call 254-1304 or mail registration to: Daviess County SWCD

ATTN: Farm Fair

Route 3, Box 434A

Washington, IN 47501

SAMPLE

Teachers: Please take a few minutes to fill out this evaluation and drop it off in the box near the front doors in the 4-H building at the end of the day. Your input is valued and appreciated.

Our goal was to make the Farm Fair both educational and funfor the students. Do you feel we achieved this? _____

Was there enough time at each booth, with enough time to get to your next booth? _____

Was there enough time for lunch? _____

Would you like to see the date of the Farm Fair changed: If so, when? _____

Would you prefer the Farm Fair to be less structured? (For example, have the booth set up for students to visit randomly) _____

Did you class have a favorite booth? _____

Comments and suggestions _____

Thank you! Your comments and suggestions will be very helpful in planning next year's Farm Fair!

Name and School (optional) _____ Call 254-

1304 or mail registration to: Daviess County SWCD

ATTN: Farm Fair

Route 3, Box 434A

Washington, IN 47501

SAMPLE

Teachers: Please take a few minutes to fill out this evaluation and drop it off in the box near the front doors in the 4-H building at the end of the day. Your input is valued and appreciated.

Our goal was to make the Farm Fair both educational and funfor the students. Do you feel we achieved this? _____

Field Days/Tours

Was there enough time at each booth, with enough time to get to your next booth? _____

Was there enough time for lunch? _____

Would you like to see the date of the Farm Fair changed: If so, when? _____

Would you prefer the Farm Fair to be less structured? (For example, have the booth set up for students to visit randomly) _____

Did you class have a favorite booth? _____

Comments and suggestions _____

Thank you! Your comments and suggestions will be very helpful in planning next year's Farm Fair!

Name and School (optional) _____

Lesson Plans

Buggy Water

(This lesson was developed for and is part of the curriculum “The Wonderful Water Connection.”)

Summary: Water Pollution; causes, effects, biological and chemical testing solutions.

Ages: K - 1st grade

Duration: Preparation time = 15 minutes. Lesson = 25 –45 minutes.

Materials:

A small aquarium with plastic fish and plants, gravel, and water
9 small containers of “pollution” (instant tea, green Kool-Aid, dried parsley, liquid gravy seasoning, soy sauce, tiny pieces of paper, detergent, red food coloring)
wooden spoon
ten or more film containers with 10 plastic bugs inside
laminated pollution tolerance keys
optional: samples of benthic macro invertebrates, color photos of benthic macro-invertebrates, D-net, kick sifter, or other collecting equipment.

Background: Surface water quality is important to all of us. Although most of Indiana gets its drinking water supply from ground water, the quality of surface water has a direct impact on those Hoosiers who do get their water from surface supplies. Surface water is also used for irrigation, livestock watering, and many recreational uses. The Clean Water Act states a desired goal of making all U. S. surface water swimmable and fishable. In our area, many streams and rivers have an e.coli bacteria count high enough that the EPA does not consider them safe for “full body contact.” Safe rates are under 200 colonies per liter of water.

Water quality monitoring can be done with chemical tests for certain specific substances. For example, in the Water Watchers and River Watch programs we test for phosphates, nitrates, turbidity, total solids, temperature change, dissolved oxygen, biological oxygen demand, pH, and fecal bacteria. These tests can be factored to determine general water quality, and they also help identify sources of contaminants.

Studying benthic macro-invertebrates can also give us a general water quality index. Just like carp can live in almost any water and trout can only live in cold, fast moving, clean water, some aquatic invertebrates can tolerate high levels of pollution and others cannot. By identifying the critters on the bottom, and keying them into a pollution tolerance index, we can tell the general quality of the water.

Benthic macro-invertebrates are used to index water quality because they are less mobile than fish, yet many live in the water for over a year. Also, they are small and easy to catch. Most of the insects we study are in the nymph or larval stage. Many of these adult insects are winged, like dragonflies.

Lesson Plans

Lesson Description: Tell “A Fish Story”

A Fish Story

(adapted from “A Fish Story” by Patricia Chilton, Educational Coordinator, Kalamazoo Soil Conservation District, Kalamazoo, MI and Sue Schlemmer, Educational Coordinator, LaGrange County SWCD, LaGrange, IN.

This is the story about a river, a fish, and the effect that people can have on water quality, and the things that live in the water. Water quality is how clean the water is.

Once upon a time, there was a little fish who lived in a nice clean river. The river flowed through many farms and small towns, and even through a few big cities!

The little fish swam downstream. It swam past lots of farm land with grassy banks. The fish came to a place where there was no grass growing in the soil alongside the river. The river bank was eroded! That meant that when it rained the soil was not protected by the grass from the rushing water and it wasn't held tightly by the roots of the plants. The soil was loosened up and flowed with the water into the river- like this. (Put a pinch of instant coffee or tea from container #1 into the water and stir.) Ugh! Soil particles in the water make it hard for fish to “breathe,” because fish take water into their gills to get the oxygen they need. But it was just a little soil, and there was lots of water, so the little fish swam on.

The next eroded bank the little fish swam by was right beside a field of corn. When this soil washed into the river it still had some of the plant food, called fertilizer, mixed in with it. (Put a pinch of green Kool-Aid from #2 into the water and stir.) Now fertilizer is good for making things grow, and it is good when it makes the seeds the farmers plant grow into healthy plants, or when it makes your yard lush and green. But if the fertilizer is in the water, it makes the water plants grow, too! Too many plants growing too fast in the water will die. When they fall to the bottom of the river and decompose (or rot) they use up oxygen – again making it hard for fish and other animals in the water to get the oxygen they need. (Add a pinch of parsley from #3 and stir.)

Next the little fish swam past a pipe that was putting smelly, brown water in the river. This pipe was connected to an old septic system that didn't work properly. Usually when we flush our toilets or drain our bathtubs, a septic system or city sewer system works to take the pollutants out of the water, making it clean again before it gets to the river. But sometimes old systems fail, and then the dirty water can go through a pipe right into the river. If animal manure or untreated sewer water gets into the river it acts like a fertilizer, plus it can have bacteria in it that can make people very sick. (Pour in a little gravy seasoning from #4 and stir.)

As the river runs close to the highway and the new shopping center, there is a big storm drain that dumps rain water from the highway and parking lot into the river. Oil leaking from cars (Pour a little soy sauce from #5) and salt put on the highway to melt snow and ice can get into the river from this drain. (Put in a pinch of salt from #6). This little fish isn't a salt water fish that lives in the ocean! Salt and oil aren't good for this fish!

Lesson Plans

Sometimes people don't remember to put their trash in trash containers. Litter can end up in our rivers when people are careless. (Put some paper from #7 into the stream) Paper and trash are not good food for fish, and it makes the river even dirtier.

Factories along the river have rules to follow to make sure they put clean water back into the river after they use it to make the things they sell. Sometimes pipes leak, or systems fail and chemicals, detergent, or hot water can end up in the river (#8 has detergent, add it now.) None of these things are good for the fish and other creatures who live in the water.

Usually, the city waste water treatment plant is the last thing downstream in the city. It is very expensive to build treatment plants that can handle all the water and hold it until it is made clean again. Most cities try very hard to make their plants work correctly. Sometimes, especially after a hard rain, water that hasn't been made clean again gets into the river. (Add two drops of red food coloring from #9- don't stir this time, watch it mix.)

What happened to the nice clean river our little fish was swimming in? Who made it dirty? Who can clean it up? Everyone must work together – each doing what they can to keep our water clean and safe for small fish and people, too!!!

Discuss the story with the students and see if they think the fish liked the clean water better than the dirty water.

Ask if any of them has been to a river or stream. Did you see fish there? Did you know that some fish and other animals that live in the water can live in very polluted water? Other kinds of fish and animals can only live in clean water. We can tell if water is clean or dirty by looking at the kinds of animals that live there.

Explain that one way we can know if the water in a river or stream is clean is to collect small animals that live at the bottom of the water. We call these small animals "benthic macro-invertebrates." Benthic means they live on the bottom, macro mean they are big enough to see without using a microscope or magnifying glass, and invertebrate means they are animals that do not have backbones. People have backbones; you can feel your backbone. Snails, insects, spiders, clams and other animals have a hard shell on the outside and no bones on the inside. These animals are invertebrates. When we identify the kind of animal we have collected, we can tell if the water is clean or polluted. If most of the animals we collect can only live in clean water, then we know the water we collected them from is clean. If most or all of the animals can live in polluted water, then we know that the water they live in is polluted.

Explain that they are now going to get pretend water samples for them to test. Each container has ten plastic bugs in it. Some of the bugs are green, some are yellow, and some are red. Separate the students into groups of two or three students. Hand out the worksheets with the smiley face, the straight face and the frown. The green bugs go in the section with the smiley face. These bugs can only live in water that is very clean. The yellow bugs go in the space

Lesson Plans

with the straight face. These bugs can live where water is not as clean as the green bugs, but it still needs to be somewhat clean. The red bugs can live anywhere, even dirty, polluted water. So they go in the section marked with the frowning face.

After they have sorted all their bugs, have the students report on how many bugs they had in each section and whether their water is clean, dirty, or in between.

Wrap-up: How can you tell if water in a stream is polluted? What could have caused that pollution? What can we do to clean up pollution in the water? What is the best way to take care of our rivers and streams? Remember that everyone must work together – each doing what he or she can to keep our water clean and safe for small fish and people, too!!!

Key Terms:

Aquatic: Something that lives in or near the water.

Benthic Macro-invertebrate: A bottom dwelling insect that is large enough to see with the naked eye, and doesn't have a backbone.

Pollution: A resource that is out of place and is somewhere it does not belong.

Septic Systems: Tanks and filtration fields that clean waste water from homes that do not have a public system to handle waste.

Sewer System: The public utility that handles waste from the homes and businesses in a city or community.

Water Quality: How clean or dirty the water is.

Extensions:

- visit a stream or river and actually collect benthic macro-invertebrates..

References:

Save Our Streams, Issac Walton League.

Project WILD curriculum guide, Activity "Water Canaries"

Field Manual for Water Quality Monitoring, Mitchell & Stapp,

Aquatic Entomology, W. Patrick McCafferty

Freshwater Macro-invertebrates of Northeastern North America, Barbara L.

Peckarsky, Pierre R. Fraissinet, Marjory A. Penton and Don J. Conlkin, Jr.

For the Younger Set: Nature Club: Ponds and Streams, John Stidworthy

One Small Square Pond, Donald M. Silver

Hand-outs used: Pollution Sheets

Follow up: Use actual invertebrate samples to help students identify real insects.

Community Action Ideas:

- Take the students to a body of water to do water quality testing
- Start an adult volunteer water monitoring program.

Costs: \$20.00 for supplies (Most film processors will donate the film canisters)

Lesson Plans

Submitted by: Nancy Brown, Elkhart County SWCD, 17746-B County Road 34, Goshen, IN
46528-9261, phone: (219) 533-3630, e-mail:
HYPERLINK <mailto:nbrown@ingoshen.fsc.usda.gov>
nbrown@ingoshen.fsc.usda.gov

Earthworms and the Soil

Summary: This lesson will explain the importance of soil, why to protect it, and the importance of worms.

Ages: K-4th grade

Duration: Preparation time = Set up aquarium one week before. Lesson = 30 minutes.

Materials:

aquarium
piece of glass to fit down in aquarium
organic matter (compost)
earthworms

Background: Soil is made up of four basic ingredients: sand, silt, clay, and organic matter. Organic matter is something that was once living, is now dead, and has become part of the soil. The majority of organic matter in the soil comes from dead plants. This organic matter provides nutrients (vitamins and minerals) that make the soil healthy for plants to grow.

Healthy soil also makes a good home for the many different creatures that live in it, such as the earthworm. The earthworm is important to the soil for many reasons. One reason is because they burrow through the soil. These channels allow rainwater to soak into the ground. This water is cleaned as it goes down through the soil, and then we drink this clean water from the wells we dig deep into the ground. These tunnels also allow air to get into the soil for the plant roots to grow.

Earthworms are also important because they help turn dead plants into organic matter by eating them. As the dead plants pass through the earthworm's digestive system, it becomes a nutrient rich waste called castings. This is nature's way of recycling dead plants and animals. When earthworms die, they also become part of the nutrients in the soil. Plants take up nutrients through their roots when they grow, and plants produce many of the foods we eat.

Healthy soil is important for earthworms and plants. One of the things that makes soil unhealthy is erosion. Erosion makes the soil unhealthy by washing away the essential nutrients and topsoil that contain the organic matter.

Lesson Description: A week prior to the presentation, put a piece of glass in an aquarium so that the earthworm burrows will be visible. Fill the space between the piece of glass and the front of the aquarium with the compost. Put earthworms in the compost. Keep the compost moist and store in a dark location.

Start the presentation by explaining why soil and earthworms are important to each other and to us.

Lesson Plans

Explain the make-up of soil and the importance of healthy soil for plants and earthworms.

Show the students the aquarium and point out the tunnels. Explain how the tunnels help water and air enter the soil.

Show the students the castings and explain how nature recycles nutrients for the plants to use. Nutrients are important for healthy soil.

Talk about erosion and why it creates unhealthy soil.

Wrap-up: Reiterate that earthworms are important to keep the soil healthy and everything that lives on the earth, and even for the safe, clean drinking water we get from well.

Key Terms:

Castings: The waste excreted by earthworms.

Erosion: The wearing away of soil by water, wind and other factors.

Organic Matter: Anything that was living, that is now dead and part of the soil.

Extensions:

hand out gummy worms at the end

give each student an earthworm to investigate

use an earthworm diagram to explain the parts of an earthworm

go outside to dig for earthworms

Costs: \$30.00 for supplies (aquarium, glass, and worms)

Submitted by: Mark McCauley, Hamilton County SWCD, 925 Division St. Rm 103,
Noblesville, IN 46060, phone: (317) 773-1432, e-mail: in390!mmcaule

Lesson Plans

Wonderous Worms

Summary: Teach students about the characteristics of earthworms, their lives, role in nature and relationship with the soil.

Ages: K – 5th grade

Duration: Lesson = 30 - 45 minutes.

Materials:

one earthworm for every 3-4 students
poster earthworm drawing labeled with seta, segments, mouth, clitellum, and other important parts
five cut out hats to fit earthworm on poster (ball cap, pirate hat, magician cap, hard hat, and leaf hat)
plastic cups
one gummy worm for each student
Nestle's quick chocolate mix
wet paper towels
earthworm farm (optional)

Background: Earthworms are slimy, creepy, crawlers that are very important to us all. Earthworms do not have eyes or ears or noses, they sense vibrations in the soil. They do, however, have a mouth. Worms use their mouths to eat soil and organic matter. Earthworms receive their nutrients from the dead plants and animals that make up organic matter. After an earthworm eats the soil, it enters his crop, then moves to the gizzard, then to the stomach and intestines. The crop and gizzard grind up the food, since earthworms don't have teeth. The food that is not digested passes out of the earthworm's body in what is called a casting. The casting is pure fertilizer that helps plants grow.

As earthworms move through the soil, they create tunnels that allow water and air to enter the soil. This also helps loosen the soil so plant roots can grow more easily. These tunnels are important to plant growth, and in turn help humans that need plants for food.

Worms' bodies are separated into segments, and even though they don't look like they have a head and tail, they do. And, contrary to popular belief, if an earthworm is cut in two, it does not create two worms. If a worm is cut before the first 12 segments or after the last 4 or 5, it does have the ability to regenerate new parts. The earthworm usually moves head first by using its seta and two types of muscles. The seta are tiny bristles on the worm's body that helps them grip the soil. Worms breathe through their skin and they have five hearts.

Earthworms are both male and female. The enlarged segment of an earthworm's body is called the clitellum. This is the female section of the worm which produces eggs, but earthworms also have a male section close to the tail. To reproduce, two earthworms will lie head to tail and fertilize each other. The clitellum then produces an egg sack that slips off the earthworm's body. When baby earthworms hatch, they look like white threads.

Lesson Plans

Lesson Description:

Beforehand, put gummy worms in container with lid. Pour nestle quick chocolate mix over them. Shake to coat the worm with “dirt”.

Show the class the poster of the earthworm diagram. Ask them if they earthworm has eyes? ears? a mouth? Explain what and how an earthworm moves and eats.

Point out the different segments of the worm and explain each part to the students.

Separate them into groups of 3 or 4 students.

Give each group an earthworm and remind them that earthworms can feel, so they should just pet their worm, not pick it up or squeeze it.

Explain that earthworms are sensitive to light, heat and moisture.

Collect the earthworms and have students wash their hands.

Explain that earthworms all over the world are heroes of many hats. Place the caps one at a time on the poster.

Ball cap is the super hero hat. “We change the face of the planet”.

Pirate cap is the Pirate of the deep. “We turn your trash into treasured black gold.”

Magician cap “We swallow dirt and ABRACADABRA! it comes out as beautiful rich soil”

The hard hat is for the soil engineer. “We move rocks and debris and tunnel through the soil bringing air to help plants grow healthy and strong.”

The leaf hat is for Matter Recycler. “We turn old rotten leaves and organic waste into rich fertile soil.”

Explain that earthworms are very important to the soil and the environment. Plants need them for their roots and animals, like humans, like to eat them.

Eat a gummy worm (or a real one, your choice!).

Pass out gummy worms to students.

Wrap-up: Discuss the importance of worms for plants, and the importance of plants for humans. Explain that worms are an essential part of our environment.

Key Terms:

Castings: The waste excreted by earthworms.

Clitellum: The enlarged female section of an earthworm.

Crop: A digestive organ of the earthworm.

Gizzard: The part of the earthworm’s digestive track that grinds the food.

Organic Matter: Anything that was living, that is now dead and part of the soil.

Seta: The bristles on the underside of an earthworm.

Extensions:

build a worm composting bin

build a worm farm

References:

Earthworms, Dirt and Rotten Leaves, an Exploration in Ecology by Molly McLughlin

Its Easy to Have an Earthworm Visit You by Caroline O’Hagan.

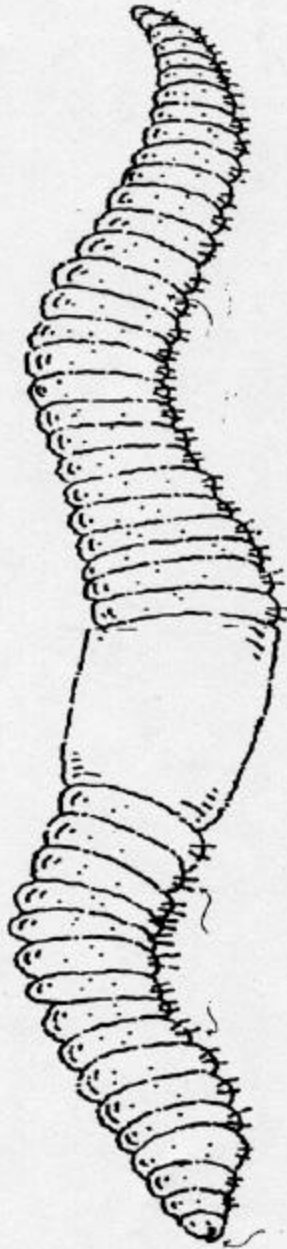
Discovering Worms by Jennifer Coldrey.

Lesson Plans

Costs: \$10.00 - \$20.00 for supplies (depending on class size)

Submitted by: Saint Joseph SWCD phone: (219) 291-2300 and Pam Towle, Hancock County SWCD 1101 W. Main St. Ste. N., Greenfield, IN 46140 phone: (317) 462-4501 e-mail:

THE WONDEROUS WORM



KEY WORDS:

Segments: Earthworms are made up of rings called segments.

Setae: Tiny bristles that help the worm move through the soil

Anterior: The front of the worm. This end is slightly pointed and narrow which thickens to force soil apart.

Posterior: The rear of the worm.

Lesson Plans

Wonders of Wildlife

Summary: This lesson addresses the importance of wildlife, what habitat is, and how wildlife depends on habitat for survival.

Ages: K – 8th grade (Adapt content and activities to suit audience)

Duration: Lesson = 45 minutes.

Materials:

ball of string

straight pins

labeled pictures of wildlife (laminated)

small examples of habitat (such as: sample of soil, small log, pine cone, etc.)

Background: Wildlife is important for a healthy and balanced environment, and every element is important (water, soil, habitats, wildlife, etc.). Wildlife is part of the food chain; it disperses plant seeds, recycles nutrients, fertilizes our soil, and is aesthetically pleasing. Wildlife is important to the environment and, therefore, important to us.

The biggest threat to wildlife today is habitat loss. Habitat is the environment in which an animal lives. It includes food, water, shelter, and space in an arrangement appropriate for the animal's needs.

Lesson Description:

Ask the students what wildlife is. Explain wildlife and have them give you some examples. Ask why wildlife is important.

Have the kids sit in a circle to play a game called “webbing.” You will help them visualize how all things are important, including wildlife. Start by naming yourself as a component of the web of life (ex. a field mouse). Then ask the question pertaining to that component (ex. What would eat a field mouse? or Where does a field mouse live?) To the person that gives a correct answer, (i.e. hawk) toss the ball of string while holding on to a section. Then ask another question pertaining to the last answer and toss the ball of string to the person who answers. Continue connecting the children with string as you incorporate plant, animal, water, and soil components in your questions. After everyone has a link to the string and realizes the connectivity of all things, designate a component of the environment to be affected (i.e., the field that the field mouse lives in is developed) and have them tug on the string. Then direct those that feel a tug to tug back, and continue this until everyone is tugging.

Reemphasize the importance of wildlife and how one element can affect the entire web of life.

Ask what “endangered” is and explain that the biggest threat to wildlife is loss of habitat. Describe what habitat is and ask them where they live. Explain the difference between a home (the place where you spend a lot of your time) and a habitat (community, city, earth). Ask them what for some examples of habitats. (desert, wetlands, forest, meadow). Then

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show them the examples of habitat you have and ask them if these could be a habitat and who would live in each kind of habitat.

Summarize what they learned about the importance of wildlife and habitat.

Explain that the next activity is a wild animal clue game.

Seat the students in a circle.

Pin a different animal on each students back, without letting them see it. They will have to ask other students questions to figure out how they are.

As you are pinning the pictures on, discuss what kind of questions would be good to ask (What is my habitat, Do I have fur, scales or feather? Do I walk crawl or swim? etc.).

Go around the circle and let them ask ONE question. They get ONE chance to guess their identity, then they must sit back down and think until their next turn. Once they guess their identity, they get a prize and everyone applauds. Note: This works best with 15 students or less. Split larger groups and play simultaneously with you and the teacher.

Wrap-up: Reinforce that wildlife species have their own habitat type and require different things in their environment. It is important that we conserve their habitat because they are important for the environment and us.

Key Terms:

Habitat: Food, water, shelter, and space in an arrangement appropriate for the animal's needs.

Wildlife: Non-tame plants or animals that live in the wild, and are self-sufficient for their needs.

Extensions:

Look around outside the school building or take field trips to specific habitat types and observe the wildlife or wildlife signs there.

Develop an outdoor lab to improve the quality of the habitat around the school.

References:

Sharing Nature with Children by Joseph Cornell

Hand-outs used: "Where is Home" and "Who Lives Where" by The Learning Works, Inc.

Community Action Ideas:

get group to initiate/raise support for outdoor lab for the school

improve habitat in public area such as a park

do a clean-up or improvement in a wild area

Costs: \$2.50 for initial supplies (ball of string, straight pins, laminate)

Submitted by: Lauren Lynch, Gibson County SWCD, 229 S. 2nd Ave. Suite 3, Princeton, IN 47670, phone: (812) 385-4849 ext. 110, e-mail:

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Lesson Plans

Water Magic

Summary: Water Magic teaches about many different aspects of water including density, dissolving, water tension, capillary action, and gas bubbles.

Ages: 2nd – 8th grade

Duration: Preparation time = time to collect all materials. Lesson = 1 – 2 hours

Materials:

salt	hot water	measuring cups
fresh egg	food coloring	dark corn syrup
cooking oil	pennies	string
shallow pan	white plates	rubbing alcohol
dish soap	popsicle sticks	milk
vinegar	baking soda	cooked spaghetti
small bottle		

Background: Water is one of most fascinating and abundant substances of earth. It has many unique properties that make it essential for all forms of life on earth. One of the unique features is that many substances, such as salt and sugar, can dissolve in water. Water is made up of two hydrogen molecules and one oxygen molecule. The hydrogen molecules have a positive charge and oxygen has a negative charge. The molecules act like magnets that pull apart other substances and they thus dissolve.

The charges of water are also attracted to each other and form water tension. This water tension forms a “skin” on the surface of water. This charge is also why there is capillary action. Water will move up an object if the charges are attracted to that object.

Water is also unique because of its density. Density is the measurement of a substance’s weight according to its size. For example, a pound of lead would take up a lot less room than a pound of feathers. Water’s density is what is used to measure the densities of all other substances.

Lesson Description:

Dissolving and Density

Activity 1- Disappearing Salt

Ask the students if you have 1 cup of hot water and you add $\frac{1}{4}$ cup of salt, what should the water level read in the measuring cup? Most students will guess 1 $\frac{1}{4}$ cups.

Add $\frac{1}{4}$ cup salt to 1 cup water and stir. Ask the class what the water level really is. It is only 1 cup. Explain that the salt dissolved in the water and is now suspended in between water molecules.

Activity 2- Float an Egg

Explain that you are going to magically float an egg halfway up in a glass.

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Add some food coloring to the salt water. Place the egg on the salt water and carefully pour a different colored tap water on the salt water. (You may want to carefully pour the water over a spoon to prevent it from mixing.) Since the egg is less dense than salt water, but more dense than fresh water, it floats in the middle.

Activity 3- Which is most dense?

Tell the students you are going to experiment with three different substances to see which one is the most dense, which is in the middle and which is least dense.

Pour corn syrup into a glass, add oil, and then water. The oil should float on top, water in the middle, and corn syrup on the bottom.

Water Tension

Activity 1- Is it Full?

Separate the class into groups of three. Give each group a cup that is filled to the top with water, a stack of pennies, and some paper towels.

Have the students carefully place the penny on the edge of the glass and let it slide into the water. Have each group keep track of how many pennies they can fit into this full glass of water.

Activity 2- Defying Gravity

Attach a string to the spout of a measuring cup filled with water. Hold the string at a 45 degree angle over a pan.

Slowly pour the water from the measuring cup so it flows down the string. The surface tension of the water kept it on the string, overcoming the effects of gravity.

Activity 3- Shy Blue

Pour a small circle of water onto a white plate.

Add a few drops of food coloring to the water.

Add rubbing alcohol a drop at a time to the water.

Since the surface tension of water is stronger than that of alcohol, the water molecules pulled themselves away from the alcohol, leaving white alcohol spots in the blue water.

Activity 4- Boat Races

Fill a shallow pan with water.

Dip one end of a popsicle stick in dish soap. Take the stick with detergent on it and a plain stick and have a race to see which can move across the pan the fastest.

The stick with the dish soap should move faster because the dish soap breaks the surface tension of the water.

Activity 5- Swirling Colors

Pour some milk onto a white plate.

Add some food coloring.

Now drop in dish soap.

The colors will stream and swirl as the dish soap moves the water molecules found in the milk.

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Capillary Action and Gas Bubbles

Activity 1- The Flower

Cut a piece of paper into a flower shape.

Fold the petals straight up.

Place in a bowl of water. The petals of the flower will unfold because the water is moving up the paper through capillary action.

Activity 2- Purple Worms

Mix a cup of vinegar into a cup of water. Add a few drops of food coloring

Add 2 tablespoons of baking soda and some cooked spaghetti. The gas bubbles created from the vinegar and soda attach themselves to the spaghetti and makes them rise to the surface.

When the bubbles burst, the “worms” move down to the bottom of the glass.

Key Terms:

Capillary Action: The movement of water up an object because of molecular attraction.

Density: The measure of how heavy an object is compared to its size.

Water Tension: The attraction of water molecules to each other.

Extensions:

Make kits so lab groups can do their own experiments.

References:

Project WET Curriculum & Activity Guide. Activity: “The Watercourse.”
and the Council for Environmental Education. 1995 pg. 267-270.

Costs: \$10.00 for supplies

Submitted by: Mary Arnold Roller, Rush County SWCD, 146 E. US 52, Rushville, Indiana 46713, phone: (317) 932-2589.

Lesson Plans

Trees Are Terrific

(This lesson is used with the Project Learning Tree activity “Tree Factory”.)

Summary: This lesson provides fundamental elements of trees and their biology. It incorporates identification of common trees by leaf, through use of a dichotomous key.

Ages: 3rd grade - adult

Duration: Lesson = 1 – 2 hours

Materials:

Field Guides

Peterson’s First Guide to Trees

Important Forest Trees of the Eastern U.S.

What Tree is that? Dichotomous key from the National Arbor Day Foundation

branches and leaves from deciduous and evergreen trees (Use of live specimens is best.)

copies of Ranger Rick’s NatureScope: Trees are Terrific-Keying Out Trees

index cards or slips of paper

paper sack

tape

tree cookies (cross section of a tree)

“What has a Tree Done for You Lately” poster

Background: Trees receive their nutrients through their roots and use these nutrients to make their own food through photosynthesis. Plants use carbon dioxide, water and sunlight to produce complex sugars, which they use to grow and live. Organic matter and soil particles hold the nutrients much like a magnet holds metals. The trees roots pull these nutrients out of the soil and transport them to the leaves where photosynthesis takes place. Soils also provide air, water, and stability for the tree. In return the tree’s roots hold soil in place and help to prevent erosion. Trees also break the fall of rain, which slows the speed of the raindrop and helps to prevent erosion. Different trees grow in different soils that are best suited for their needs. Some trees like the wet, sticky environment of clay soil, while other trees prefer well-drained and well-aerated sandy soils.

Trees have a highway system of tubing that moves nutrients, the sugars made from photosynthesis, water and other materials from the leaves to the roots. This system is much like our circulatory system of veins, arteries and capillaries. Leaves are the food factories for the tree. Leaves actually perform the photosynthesis: the carbon dioxide needed for photosynthesis comes in to the leaf via the stomata on the underside of the leaf. Xylem is the system of tubes that bring water and nutrients up from the roots to all the parts of the tree. Phloem is the system of tubes that transport sap from the leaves to the other parts of the tree. Cambium is the very thin layer of new cells that will grow to be new xylem, phloem and cambium.

Trees have other parts that are important and are used in protection. Bark is the tough outer

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layer and protects the trees from insects, animals and diseases as well as injuries to the tree like a car hitting the tree. Bark comes in many varieties: rough, smooth, knotty, thin and thick. The trunk of the tree is used for support and the heartwood found at the center of the tree is very dense and strong.

When identifying trees, a dichotomous key can be used, which lets you read two statements and decide which statement is true for your leaf. Opposite leaves are when there are two leaves coming from the same point or node on the twig. Alternate leaves are when the leaves are attached singly along the twig. Simple leaves are single leaves, while compound leaves have two or more leaflets (mini leaves) attached to the petiole (stem of leaf) that is attached to the twig. A leaf's shape is determined by looking at the leaf's edge. A smooth leaf has no notches or bumps. If the leaf is jagged, the leaf is toothed or serrated, and if the leaf has "hills and valley", it is said to be lobed.

Familiarize yourself with the trees you will be identifying by reading the field guides, and the Project Learning Tree manual.

Lesson Description/Procedure: Have participants stand and pretend to be a tree. Explain that their arms represent branches, their fingers are like leaves, their body is the trunk, and their feet are roots. Ask them if their feet can transport nutrients to their leaves? The answer is no, as our nutrition is usually taken orally. Explain how trees receive their nutrients and talk about photosynthesis.

Ask if trees make food year round. Explain how trees transport and store their food. Use a tree cookie to explain the xylem, phloem, cambium, bark, and heartwood.

Explain that you will become tree detectives to find out how to tell trees apart. Hand out field guides and explain how to use dichotomous keys.

Use examples to explain needles/leaves, opposite/alternate, single leaf/compound, etc.

Show the class a leaf and help them key it out to identify it.

Close the program by talking about what trees do for us. Use the "What has a Tree Done for You Lately?" poster.

Wrap-up:

Trees are a valuable renewable resource if forests are managed correctly. They are used for many purposes. It is important to understand trees so we can properly care of our forests and trees.

Key Terms:

Alternate: Single leaf attachment along the twig.

Bark: Specialized layer of cells that serve to protect the tree from disease, insects, animal damage, and fire.

Cambium: Thin layer of new growing cells that will differentiate into phloem, xylem, or

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cambium.

Heartwood: The central core of the trunk, made of dead wood, it provides support.

Node: Place of origin for a leaf, branch, or twig.

Opposite: Two or more leaves extending from the same node on a tree.

Phloem: System of cells that act together to move sap throughout the tree using both capillary action and gravity.

Stomata: Tiny opening on the under side of leaf, allow the tree to “breathe”.

Trunk: Main part of the tree. It is responsible for support and holds all the other parts.

Xylem: System of cells that act together to draw water and nutrients from the roots of plants using capillary action.

Extensions:

Use Jeopardy game to reinforce vocabulary words.

Have contest to have them key out specimens.

Use tree rings to age tree

References:

Ranger Rick’s NatureScope Trees are Terrific National Wildlife Federation, 1400 16th St. Washington D.C., 20036-2266

What Tree is That? A guide to the more common trees found in Eastern and Central U.S.

The National Arbor Day Foundation, 100 Arbor Avenue, Nebraska City, NE, 68410,

HYPERLINK <http://www.arborday.org>

Fifty Trees of Indiana Indiana Department of Natural Resources, Purdue University.

Nature Education Kits: What Leaf is it? Young Naturalist, 1900 N. Main St. (316) 283-4103, Newton, KS 67114

Important Forest Trees of the Eastern U.S., USDA- Forest Service

“What has a Tree Done for You Lately?” Poster, The Indiana Hardwood

Lumberman’s Association 3600 Woodview Trace, Indianapolis, IN 46268 (765) 875-3660

Hand-outs used: pages 21-22 of Ranger Rick’s NatureScope Trees are Terrific

Community Action Ideas:

have a tree planting at the school or other community site.

Costs: field guides vary from free to around \$10.00. The “What Leaf is it Kit” cost \$25.00.

Submitted by: Amy Carpenter, Jefferson County SWCD, 3382 West SR 56, Hanover, IN 47243

Lesson Plans

Edible Soil Profile

Summary: Students will learn about the different soils in a soil profile.

Ages: 5th – 8th grade

Duration: Preparation time = 30 minutes. Lesson = 30 - 60 minutes.

Materials:

2-quart canning jars with screw-on lids	rubber scraper
2 boxes instant chocolate pudding	2 boxes instant vanilla pudding
6 cups cold milk	chocolate cookies
mini marshmallows	coconut
chocolate chips	large clear bowl or terrarium
paper towels	spoons for each student
small cups for each student	measuring cups
bags or containers for used spoons and cups	a real soil profile

Background: A soil profile is a vertical cross section of soil that shows the different layers of the earth's crust. The bottom is parent material, which is the bedrock, which formed the soil. Next is the subsoil, which is a combination of gravel and rocks from the parent material and clay, silt and sand from the topsoil. The top layer is the topsoil, which has a combination of sand, silt, clay and organic matter. Organic matter, which is dead and decaying plant and animals materials, is what makes topsoil fertile. As the organic matter decays, nutrients are released into the soil. Plants absorb these necessary nutrients through their roots. Topsoil is the most important layer of the earth, but it is also the thinnest. It takes 100 – 500 years to create one inch of topsoil. Erosion occurs when wind or water carries the topsoil away. Erosion removes the fertile topsoil, and exposes the underlying layers.

Lesson Description: Show the students the real soil profile and explain the different layers of soil.

Tell them that they are going to create their own soil profile, but you're going to make them eat it when your done.

Ask for a volunteer to help you make the parent material.

Measure 3 cups of milk into a canning jar containing one whole box of vanilla and half box (about ½ cup) of vanilla pudding. Screw on the lid and ask the class to time the helper while he/she shakes the jar for 45 seconds.

Pour the pudding into the bottom of the bowl.

Now explain that usually parent material has particulate matter such as boulders and stones. Add some marshmallows and chocolate chips to represent the particulate matter.

Next ask for another volunteer to help you make the subsoil layer. Pour half a box of

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chocolate and half box of vanilla pudding into the same jar you used to make the parent material. Add two cups of milk.

Screw on the lid and have your helper shake the jar for 45 seconds. The point of the chocolate and vanilla is to represent the combination of soil and parent material.

Pour this carefully over the vanilla layer in your bowl.

Have a third volunteer come forward. Combine one cup of milk into the clean jar and add the half box of chocolate pudding. Shake the jar for 45 seconds.

Pour the chocolate layer on top. Add crumbled cookies and coconut to the top to represent the organic matter.

Have each student pick up a cup and spoon a small serving into each. When they are finished collect the spoons and cups to wash for the next time.

Wrap-up: Discuss the importance of topsoil and why we need to conserve it. Share some ways that erosion can be prevented.

Key Terms:

Erosion: The wearing away of soil by water, wind and other factors

Organic Matter: Anything that was living, that is now dead and part of the soil

Parent Material: The bedrock that the soil was formed from.

Soil Profile: A vertical cross-section of soil.

Subsoil: The layer of soil below topsoil soil. It is a combination of parent material and topsoil.

Topsoil: The top layer of soil. It is comprised of sand, silt, clay, and organic matter. It is the most fertile layer of soil.

Extensions: Create soil profiles from different areas around the county and compare the layers

Community Action Ideas: Sponsor a local soil judging contest

Costs: \$9.00 the first time, \$3.00 - \$4.00 thereafter

Submitted by: Mary Arnold Roller, Rush County SWCD, 146 E. US 52, Rushville, Indiana 46713, phone: (317) 932-2589

Indiana Geology and Soil Formation

Summary: This lesson will describe minerals, rocks, and their relationship to soil.

Ages: 5th –12th grade

Duration: Preparation time = time to find all materials. Lesson = 30 - 60 minutes.

Materials:

pencil with graphite	jewelry (gold, silver, ruby, diamond, etc.)
chalk	aluminum pop can
carton of salt	penny
toothpaste with fluoride	vitamins and minerals
vinegar	
mineral crystals	
chert (cryptocrystalline quartz)	halite crystal
fluorite	garnet
mica	feldspar
calcite	quartz (clear, rose, and geode)
pyrite	hematite
flakes of gold	
rocks	
granite (several different kinds)	sandstone
shale	halite
limestone	chalk
coal	marble
slate	quartzite
schist	gneiss
soil sample	
boulder	sand
plastic cheeseburger	
soil burger cookies	

Background: Minerals are lifeless lumps. They do not contain the remains of plants, animals or other living things. They can form as the magma from a volcano cools, as water evaporates, or which the temperature and pressure deep in the earth change them. Minerals are the same through and through, and they have the same chemical make-up wherever they are found. For example, quartz, which is used to make glass is always one part silicon (an element) and two parts oxygen (another element). Most minerals are a combination of several different elements. Gold and copper are other mineral, but they are made up of just that element. The atoms that make up the elements of a mineral are bonded together in a specific repeating pattern. This orderly arrangement is what forms a mineral's characteristic crystal shape. When cooling of the magma or evaporation is slow, large crystals have time to grow. Only tiny crystals form when a substance is cooled or evaporated very fast. Geologists use crystal shape along with color and hardness to identify minerals. These charts explain

Lesson Plans

some of the characteristics of different minerals.

Crystal shape:

MINERAL	CRYSTAL SHAPE
Salt/halite	Cubed
Flourite	Diamond
Garnet	Dodecahedron or hexoctahedron
Mica	Tabular
Feldspar	Short, prismatic
Calcite	Many shapes (cube to prism to twinned)

Mineral Color:

MINERAL	CRYSTAL COLOR	STREAK	LUSTER (the way a mineral reflects light)
Quartz (glass)	Rose, white, clear	White	Glassy (shines like glass)
Graphite (pencil)	Gray	Dark gray, black	Dull (reflects little light)
Pyrite (fools gold)	Brassy yellow, gold	Blackish	Metallic (shines brightly)
Hematite (Iron)	Red, brown, gray, black	Dark red, reddish-brown	Dull or metallic

Hardness:

MINERAL	HARDNESS	RATING
Graphite	Can scratch it with you fingernail	Very soft
Halite	Can scratch it with a penny, but not your fingernail	Soft
Pyrite	Can't scratch with a nail	Hard
Quartz	Can't scratch with a nail	Hard
Gold	Can bite it	Very soft!

Rocks are defined as substances made up of one or more minerals. The earth's crust is made up of many different rocks, but each forms in one of three ways.

Igneous rocks form when magma flows from a volcano, cools, and hardens.

Sedimentary rocks are layered rocks. Most get their start as wind, ice and water wear down rocks into bits of sand, soil, mud, pebbles, and clay. As these particles wash into rivers, lakes and oceans, it piles up, layer upon layer. Over time, as the pressure on the bottom layers increases, the sediment compacts and cements together to form solid rock.

Metamorphic rocks form when igneous and sedimentary rocks are subjected to intense heat and pressure deep within the Earth, changing their mineral composition and grain size.

Two forces- weathering and erosion are continually wearing away igneous, metamorphic, and sedimentary rocks and creating new sedimentary rocks. Weathering causes rocks to fragment, crack, crumble, or break down. All rocks are continually broken down into smaller

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and smaller bits, they eventually get so small the particles become sand or silt. Although soil is mostly made up of tiny rock fragments, it also contains decayed plant and animal materials which provide the nutrients that plants need to grow.

Lesson Description:

Explain that you are going to be teaching about rocks and minerals.

Ask how many of them have used a rock today? Probably most of you have. let's see... pencils = graphite; earrings = gold, silver, diamond, ruby, etc.; chalk = calcite; pop can = aluminum; salt = halite; penny = copper; window glass = silica from quartz; toothpaste = fluoride; vitamins = minerals

All of these are minerals, but I asked if you were using rocks. How do you suppose minerals are related to rocks? First we will learn what a minerals is.

Explain the definition of minerals using the background information.

Show the students a mineral book, and ask "How do geologists tell one mineral from another?" Explain that geologists use crystal shape, color and hardness to identify minerals. Pass different minerals around to show examples of different minerals and their crystal shape, color and hardness.

Now that the class knows what a mineral is, explain the relationship between rocks and minerals.

Show the class a piece of granite and ask them if anyone can guess what this rock has in common with the minerals they just saw. The rock is made up of different minerals. Pass around quartz, mica and feldspar, and explain that all these minerals combine to make this rock. Ask if they know how these minerals combined to form a rock.

Define igneous, sedimentary, and metamorphic rocks for the class. Pass around examples of some common rocks found in Indiana such as:

granite- an igneous rock.

sandstone- a sedimentary rock that is made up of quartz

shale- a sedimentary rock made up of layers of mud (quartz, feldspar, and clay)

halite- a sedimentary rock that forms by the evaporation of water that has certain substances in it.

limestone- a sedimentary rock that forms by the evaporation of water that has calcite in it.

The calcite usually comes from shellfish that remove calcite from the water and use it to build their shells. When these animals die, their shells pile up on the bottom and limestone is formed as the shells become cemented together.

chalk- another sedimentary rock that is made from the shells, skeletons, and other parts of plants and animals.

marble- a metamorphic rock formed from limestone.

slate- a metamorphic rock formed from shale

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quartzite- a metamorphic rock from sandstone

Explain that new rocks are still being formed by two forces- weathering and erosion. These forces wear away at igneous, sedimentary, and metamorphic rocks to create new sedimentary rocks.

Show them examples of weathering:

Freeze and crack: when water seeps into crack in rocks and freezes it can force a rock to split. Has anyone ever frozen a can of pop? What happened?

Roots of destruction: plants can grow in the small bits of soil that collect in the rock cracks. As the plant's roots grow, they expand and force the crack to widen and deepen. Eventually, roots can split rock apart.

Chemical breakdown: Some minerals such as pyrite, form weak acids when they dissolve in rainwater. These acids help to decompose rocks. (Pour vinegar over calcite to show how it fizzes. This is how the cave in southern Indiana are formed)

Explain that weathering breaks down rock into smaller and smaller bits to form silt or sand. These tiny bits of rocks contain decayed plant and animal materials, such as rotten leaves, to provide the nutrients that plants need to grow.

Erosion also breaks down rocks, and carries sediment that later will become sedimentary rock.

Sand that is carrying by high-speed winds carries a load of dust and sand and can sandblast rocks and break them down.

Water in a fast flowing stream carries a lot more than just water. Soil, sand, silt, pebbles, and even boulders are sometimes carried along with the current. As the pieces of rock get carried along, they carve into the landscape.

Conclude by explaining that even though erosion will form new rocks, too much erosion can be harmful. People need soil to grow plants that we need for food, shelter and clothes.

Key Terms:

Erosion: The wearing away of soil by water, wind and other factors

Mineral: An inorganic substance that has the same chemical make-up throughout.

Igneous: Rock formed from cooled magma from a volcano.

Sedimentary: Rocks formed when sediment compacts and cements together.

Metamorphic: Igneous and sedimentary rocks that have been changed by intense heat and pressure.

Weathering: The break down of rocks caused by the weather.

Extensions:

Have the students do a rock or mineral collection.

Lesson Plans

Hand out Soil Burger cookies
Visit an eroded area or quarry.

Costs: Depends on how many rocks you buy and how many you collect.

Submitted by: Cathy Myers, Hamilton County SWCD, 925 Division St., Noblesville, IN 46060, phone: (317) 773-1432, e-mail: in390!cmyers

Lesson Plans

What is a Watershed?

(This lesson is an adaptation of the “Sum of the Parts Activity” from the Project WET Curriculum Guide and the “Model Watershed Experiment” from Indiana’s Water Riches.)

Summary: This lesson will introduce students to the concept of a watershed. They will learn that people living in the watershed affect water quality.

Ages: 8th –12th grade

Duration: Preparation time = 15 minutes. Lesson = 60 minutes.

Materials:

Rectangular aluminum foil pan	waxed paper
hand-held spray bottle	Kool-aid
11” x 17” paper	blue marker
pencils	

Background: A watershed is defined as the area of land that water flows across on its way to a stream, river or lake. Watersheds can range in size from a few acres that drain to a farm pond to thousands of square miles that drain into a river. The topography determines where the water will flow. Water always travels to the lowest point. The concept of a watershed is important to water quality because the pollution that enters the water systems comes from the surrounding watershed. Here is a list of possible pollutants, their sources and preventions.

Animal Waste: Animal waste is a problem because it carries E. coli and other fecal coliforms and adds nutrients to the water. Nutrients decrease water quality by increasing the rate of eutrophication. The waste that is polluting the water may run off from feedlots, or it can enter the water system when people dispose of pet waste in storm drains. Some preventions include:
using containment facilities at feedlots such as dry stacks or containment basins.
properly disposing of pet waste.

Fertilizers: Inorganic nutrients can become a problem when people do not follow the application rates properly. The excess fertilizer adds nutrients to the water and increases the rate of eutrophication. Fertilizers can come from lawns, golf courses and agricultural fields. The pollution can be prevented by:
following the application directions listed on the container.
using natural fertilizers such as compost.

Litter: Litter is one of the pollutants in bodies of water. Litter comes from drainage systems along roadsides and from illegal dumping sites. Litter can be unsightly and can harm wildlife. The only way that litter can be removed is by physically picking it up. that is why it is important to participate in clean –up days in your community. The prevention to litter is simple: dispose of trash properly.

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Other chemicals: (Motor oil, antifreeze, paint, etc.) These pollutants can come from any person in the watershed. Most of this pollution occurs when chemicals are not correctly used or disposed of properly. Some possible solutions are:

fixing any vehicles that are leaking oil, antifreeze, or any other substance.

following directions when using chemicals.

disposing of ALL chemicals properly (don't use storm drains as a dumping site).

Pesticides: (herbicides, insecticides, fungicides, etc.) Pesticides are used by anyone trying to kill a pest, such as insects, weeds, molds, and fungi. The most common users are farmers, gardeners, landscapers, and homeowners. Some alternatives to pesticides include:

encouraging predators such as spiders, lady bugs, praying mantis, purple martins, and bats.

manually destroying the pest.

mulching to discourage weed growth.

Sediment: Sediment is the direct result of soil erosion. There are many reasons why erosion and sedimentation are concerns. Some of these include: filling in waterways, increasing turbidity, making the water unsuitable for some organisms to live in, and decreasing the fertility of the land. Erosion will occur any time the vegetation is removed from the land, exposing the soil to wind and water. This happens most often on agricultural fields and construction sites. Erosion can be prevented through a variety of erosion control methods. Some methods include:

installing physical controls such as erosion control blankets, silt fences, grassed waterways, water and sediment control basins, filter strips, and buffer zones.

using conservation tillage practices or contour planting.

establishing vegetative cover on any disturbed site.

Lesson Description:

Activity one illustrates how to build a model watershed.

Activity 1

Take a rectangular aluminum foil pan and place one or two crumbled balls of waxed paper at one end of the pan.

Cover this with a piece of waxed paper that is larger than the pan.

Create a basin at the end opposite the waxed paper balls.

Place a book under the end with the hills to represent slope and change in elevation.

Define a watershed and explain that this is a model watershed. This model shows hills at one end and a lake on the other end. Explain that an actual watershed surrounds the body of water on all sides.

Simulate rainfall by misting the model with a hand-held sprayer.

Have the students observe the flow of water, the creeks that form, and the amount of water in the lake.

Now use Kool-aid to represent pollution that is found in a watershed.

Describe what pollutants are found in watersheds and some of the possible sources of these pollutants.

Sprinkle the Kool-aid around on the hills.

Spray the pan with water again and show how pollution enters the lake from the surrounding watershed.

Lesson Plans

Have the students discuss alternatives to prevent the pollution.

Activity two helps illustrate that every one of us lives in a watershed and are responsible for keeping it healthy. Explain that the pollution entering the water comes from the surrounding watershed and each of us contributes to that pollution. The students will see that their lives affect the lives of others living downstream.

Activity 2

Take ten sheets of 11" x 17" paper. Make two rows with five sheets in each row to form a rectangle. Draw a river down the middle of the rectangle.

Separate the students into ten groups and give each group a sheet of paper with a section of the river on it. Explain that each group has just inherited a piece of river front property and one million dollars. They can develop the property any way they choose. The only rule is they can not sell it.

Have them draw how they will use the property and money.

Once they have finished explain that all the sheets are actually pieces to a puzzle

Put all the pieces together to form the river. (It is easier to line up the sheets if you number them when you draw the river.) Have the students look at the properties and discuss what pollution is leaving their property.

Each student should get something to represent their contribution to water pollution (a pen, piece of paper, hat etc.) and stand in a line.

Start at one end of the line and have that person pass his/her "pollution" downstream to the next person. That person takes his/her pollution and passes that and the other person's article downstream. This continues until everyone's "pollution" reaches the end of the line. Have the students reclaim their items.

Wrap-up: Discuss how the students at the middle and end of the line felt. Where does pollution go in a real creek? Explain that everyone lives in a watershed and the pollution we put in the water never disappears, it just passes downstream. The only way the quality of water can improve is by stopping pollution from ever entering the water. Each of us has to be responsible for the land on which we live.

Key Terms:

Erosion: The wearing away of soil by water, wind and other factors

Eutrophication: The process by which a body of water becomes polluted by nutrients; thus increasing the aquatic plant growth. When the plants die and decompose, the level of dissolved oxygen in the water decreases.

Sediment: The soil that has settled on the bottom of a body of water

Sedimentation: The process of soil settling and filling in a body of water

Turbidity: The clarity of the water

Watershed: The area of land that drains to a particular body of water

Extensions:

- Have students map out a small watershed around the school.
- Use topographical maps of the county to point out major watershed boundaries.

Lesson Plans

References:

Project WET Curriculum & Activity Guide “Sum of the Parts” activity The Watercourse and the Council for Environmental Education. 1995 pg. 267-270.

Indiana’s Water Riches “Model Watershed Experiment” Purdue University Cooperative Extension Service pg. 43-44.

Hand-outs used: “Watershed Health”- published by NRCS

Community Action Ideas:

- Organize a clean-up day at a local creek, lake or river.
- Take the students to a body of water to do water quality testing
- Take a watershed tour and look at pollution sources and preventions.

Costs: \$10.00 for supplies (Kool-aid, cake pan, waxed paper, spray bottle, etc.)

Submitted by: Carrie Parmenter, Vanderburgh County SWCD, 12445 N. Highway 41, Evansville, IN 47711, phone: (812) 867-0729 e-mail: vandswcd@dynasty.net

Lesson Plans

Tropical Rain Forests and the Indiana Connection

(This lesson is derived from the Indiana Department of Natural Resources' book Tropical Rain Forest and the Indiana Connection)

Summary: Students will compare the rain forests of South America to the trees and soils in Indiana

Ages: 1st-4th grade

Duration: Preparation time = 15 minutes. Lesson = 60 minutes.

Materials:

Rainforest poster (optional)

Rain Forest Rap video

Choice of either tantalizing treat:

Jungle Punch (makes 1 Quart)

1 banana

1 C. pineapple juice

1 pint lime sherbet

1 C. orange juice

1 can lemon-lime soda

OR

Tropical Trail Mix (makes 60 - 5oz. cup servings)

1 can Cashews

2 lbs. banana chips

1 lb. dried pineapple chunks

½ lb. sunflower seeds

1 jar dry roasted peanuts

1 package chocolate chips

½ package coconut flakes

Background:

Tropical rain forests are wet, wild, and filled with more species of plants and animals than any other habitat on Earth. Each living thing from the little soil microbe to the glamorous canopy bird; each species has its niche in this complex ecosystem that is made up in layers. In a rain forest you may find as many as 20 to 80 different species of trees in one acre while in Indiana you may find four.

The layers of the rain forest include the emergent layer, the canopy layer, the under story layer, and the herb layer. The emergent layer towers above all the other plants in the forest. These giant trees are called emergents. They grow to heights of 150 to 250 feet. There are usually only one or two of these trees per acre. Most have small leaves, umbrella shaped crowns and tall slender trunks.

The canopy layers have many flat-topped trees that are 60 –150 feet tall. The layer acts like an umbrella, shielding lower layers from heavy rains and keeping 98% of the sun's rays from reaching the forest floor. Canopy trees are the rain forest's powerhouse. Through photosynthesis, they convert sunlight into energy for flowering and bearing fruits. This attracts hundreds of species of pollinating insects. Mammals and birds help sow the seeds of canopy trees by eating the fruits then depositing the seeds on the forest floor. Some frogs will venture up the trees so that the tadpoles can swim in the miniature pools of water that collect in the leaves.

Lesson Plans

The under story layer is full of free-loading plants like the bromeliad. These plants are subjected to less light, less rain and higher humidity. To adapt, many form larger leaves with pointed tips called “drip tips”, which allow the moisture to drain down to the roots. The added leaf surface also absorbs more sunlight. Animals that live in the under story have adapted too. Shadowy light and dense vegetation make it difficult to see each other, so many use sound to communicate. The animals call out to each other in search of their mates. The trees of the under story are relatively short. Some are young trees that will one day make up the canopy layer, while other many only grow to 15 feet.

The herb layer or forest floor is made up of seedlings, herbs, and ferns, which will grow well without sun. The air is still and humid. These conditions also help billions of microorganisms to break down plant and animal debris into nutrients for the soil. Continual recycling of the plant life is what keeps tropical rain forests working.

Half of the world’s rainforests may be found in Central America, South America, Hawaii and Puerto Rico. Africa holds about 500 million acres or 19% of the world total. Tropical Asia and Australia contain 650 million acres or 24%. Today tropical rain forests make up about 7% of the Earth’s land, but rain forests house almost half of all the species of living plants and animals.

Despite what the luxurious growth might suggest, the soil is only moderately fertile. It is not rich in minerals like our Indiana soil. The tree roots of the rainforest trees draw their nutrients from the soil by a specialized fungi that cycle minerals directly into the tree roots. There is very little topsoil, because most of the nutrients which come from dead plant material is used up quickly by the living plants. The topsoil is approximately one to two inches while Indiana’s top soil will vary from 8 to 10 inches. Most rain forests are found around the equator where the temperature is relatively constant throughout the year (average 75 degrees F). The average rainfall is 60 to 90 inches or 17 feet per year. This allows the plants to grow year round. Indiana has an average rainfall of 30 inches per year.

50 million acres of rain forests are cut each year. The land is cleared for the purpose of raising beef cattle. When the rain forests are clear cut for farming, the soil is only productive for a few years. Then the topsoil is washed away by the rain and the nutrients are depleted. Leaving a barren land that is not good for farming and rivers that are filled with soil.

The tribesmen of the rain forests have learned to live of the land without destroying its contents. They plant crops that do not require rich soils and also use the wild plants. The tribesmen collect food and medicines from berries and leaves, and hunt many animals such as deer and wild hogs (peccaries).

There are many products that come from the rainforests that we use often. Some of the products include woods, glues, varnishes, medicine, chocolate and ¼ of the medical drugs prescribed in the United States. There are some American companies that have exploited the rainforest, though.

The Rainforest Action Network was formed in 1985 and their first target was Burger King Franchise, who was importing 120 million pounds of beef from South America. Thirty-five organizations began a strategy plan and with 2 years, Burger King sales dropped 12%. Then Burger King began to cancel their \$35 million contract for beef.

Lesson Description:

Lesson Plans

1. Discuss the background information with the students, explaining the rain forest layers, the differences between the rainforest and Indiana, and the effects of clear cutting on the rainforest. (show students a rainforest poster if available)
2. Show the Rain Forest Rap video
3. Talk about some of the rainforest products and tell them that you have some products for them to sample.
4. Hand out Jungle Punch or Tropical Trail Mix.

Wrap-up:

Explain that it is not a wise land management decision to clear cut the rain forest, but cutting trees is not always bad. Here in Indiana, trees make up a large part of our income. Trees are important for many products such as paper, lumber, furniture, and food.

Key Terms:

Emergent Layer: The tallest trees in the rainforest. There are usually only a few of these tall trees.

Canopy Layer: The layer below the emergent layer. This layer is made up of trees that act as an umbrella.

Under story Layer: The layer of the rainforest that is below the canopy.

Herb Layer: The forest floor.

References:

Tropical Rain Forest and the Indiana Connection Indiana Department of Natural Resource. Division of Forestry. 613 State Office Building, Indianapolis, IN 46204 (317) 232-4105.

Vanishing Rain Forest Rain Forest Rap, video. World Wildlife Fund.

Exploring the Rainforest (A whole language approach) Copycat Press P.O.Box 081546, Racine, WI 53408-1546

Community Action Ideas:

- Provide students information for adopting an acre of rainforest

Costs: \$2.00 for Tropical Rain Forest and the Indian Connection, \$10-15.00 for video, \$16.70 for Exploring Rainforest (includes a set of rain forest animals), punch or mix approximately \$0.25/student.

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Workshops

Harvest Fest

Topic/Subject Area: This program involves various topics from year to year, including local agriculture, water quality, etc.

Target Audience: Elementary School (K-5)

Audience Size: 1-2 classes

Summary: Harvest Fest is a traveling educational event sponsored by the LaPorte co. SWCD. SWCD employees go to area schools for an entire day. Set-up is usually in the gym or another large area. Each grade or class is scheduled for a 30-minute time block. The groups are split in two, with half stitching on a quilt and half learning about a special topic. Each year a different topic is discussed.

Description: Harvest Fest takes place in the fall and lasts about a month. The event is advertised in the District's bi-monthly education newsletter with the dates that it will be available. Schools can then call the SWCD office and schedule a day.

Basically, the SWCD staff travels to area schools with an exhibit that includes two Downing Displays, an applique quilt, and props and presents an educational program. Each year a different topic is discussed. Previous topics include: Water Quality, Local Agriculture, and Native Americans.

Prior to the event, our District Office Manager sews a quilt that is blocked off into 20 squares. Each square contains a picture. For example, in 1997, the theme was "LaPorte County Agriculture-Way to Grow!" and on each quilt square there was a picture representing some aspect of this topic (fruit, vegetables, animals, tractors, etc.). The office staff traced and cut out felt pieces to construct the pictures. The pictures came from enlarging pictures from several clip art books. The pieces were affixed to the quilt by using "Wonder Under Transfer Web" which just irons onto the fabric. Many needles were threaded ahead of time with various colors of embroidery floss for the students to stitch the perimeter of the figures.

The exhibit is set up in a large area, such as a gym. One end of the room is set up with a Downing Display and props. This end is where one SWCD staff member will talk about that year's particular subject and/or do a related activity. The other end is where the quilt is set up. (An associate supervisor made a quilt frame/stand that makes it very easy to set up.) another staff member discusses the quilt and how the items on it relate to our topic. The students stitch, usually one to two kids per square. When they are done, there are other tables set up with things to keep them busy. There is another Downing Display with facts and questions and answers about the topic for the kids to read. We also take puppets and a farm set for the younger kids to play with.

One class is the ideal size for this program, but more can be handled. Once they enter the room, the students are split into two groups, one group at each end. After 15 minutes, they

Workshops

rotate. We try to give each student a piece of candy or a bookmark as they leave to help him or her remember what they've learned.

Classes are scheduled every half-hour. With a 30- to 45-minute break for lunch. As there are several different grade levels, we present the same basic program with adjustments for each age group.

This program takes a lot of set-up and tear-down time but seems to very successful. It is also a very versatile program, as the topics vary from year to year. The students especially enjoy stitching the quilt.

Materials Needed: Fabric for a quilt, felt for appliques, patterns for felt appliques, Wonder Under Transfer Web, embroidery floss, needles, Downing Display(s) or similar display, materials for display boards, alternate activity for kids (puppets, books, etc.)

References/Other Support Materials: Reference materials depend on what topic you will be discussing. Ideas for activities relating to your chosen topic could come from Project Learning Tree, Project Wild, Ranger Rick Naturescopes, or ag curriculum guides.

Preparation Time: Preparing the quilt is very time consuming and should be started several months ahead of time. Other prep time would depend on how much time you need to research your topic and on the time it takes to create your displays.

Presentation Time: 30-minute time slots. 15 minutes at each station.

Handouts Used: In the past, we have not used handouts.

Community Action Ideas: The quilt is displayed at a local mall during Earth Week and at the SWCD's annual dinner meeting.

Costs: \$200.00

Submitted by: LaPorte County Soil & Water Conservation District
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Workshops

Northern Indiana Soil Management Seminar

Topic/Subject Area: Resource management on agricultural land

Target Audience: Farmers, crop advisors, and chemical applicators

Audience Size: Approximately 50

Summary: This is a five-session workshop that we sponsor with Extension that offers Continuing Education Units and Continuing Certification Hours for Crop Advisors and Pesticide Applicators. (People holding these licenses need to earn continuing credits to maintain their licenses.)

Description: We work with one of our associate supervisors, who is a crop advisor, and a technical service representative from a major chemical company to plan the agenda each year. We use an evaluation from previous years to gauge interest in different subject areas and plan the program.

Materials Needed: a meeting site and five presenters. We cater in a lunch and provide information packets for participants.

References/Other Supporting Materials: The most important references for this meeting are the presenters. With our crop advisor, company representative, Extension Agent, and T-by-2000 specialist, we are able to come up with current topics and excellent presenters, which appeals to participants. The presenters have current reference materials that they either bring or let us know how to get for participants.

Preparation Time: Usually one meeting four to six months before the event will set the agenda now that we have a “system” established. The State chemist and Indiana CCA need an agenda early so they can establish what credits are available for participants, so that needs to be done as soon as the agenda is set. We have a mailing list for labels in the computer, so the mailing only takes about a half a day. Phone calls and gathering equipment, calling caterers, confirming speakers, etc., probably takes another day. Set-up doesn’t take over an hour or two, so two or three days, broken into half days here and there will probably cover it.

Presentation Time: One day.

Hand-outs Used: Whatever is recommended by the speakers for the current topics.

Follow Up: Participants complete an evaluation at the end and we use it plan the program for the following year.

Community Action Ideas: There aren’t any really. Sometimes local chemical suppliers now contact us for speakers because they attend our meetings. (We have found that it isn’t easy to get livestock farmers or part-time farmers to meetings, but by having this one for the folks they listen to, we can get the information to the farm.)

Workshops

Costs: We charge participants to attend, so the cost of the meal, speaker fees, and hand-out expenses come from registration. Fees vary according to speakers.

Submitted by: Elkhart County Soil & Water Conservation District
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Resource Guide

CATEGORY	ITEM	CONTACT or World Wide Web address	PHONE
Catalogs	Books and more	American Camping Association	1-800-428-CAMP
Catalogs	Books, videos, curriculum material, tapes, puppets	The Rainbow Collection	888-371-3137
Catalogs	field equipment, books, field guides, puppets and more	Acom Naturalists	800-422-8886
Catalogs	Native American collection	Cherokee Publications	704-488-8856
Catalogs	Watershed research & education, water quality monitoring	Green	734-761-4951
Curriculum	Acid Rain	Great Exploration in Math & Science	510-642-7771
Curriculum	Acid Rain Curriculum	Acid Rain Foundation	919-828-9443
Curriculum	All About Water	Depart of Water Resources	916-653-1097
Curriculum	Always a River	US- EPA	513-569-7781
Curriculum	American Wetlands Month Materials	Terrene Institute	703-548-5473
Curriculum	Animal Tracks	National Wildlife Federation	800-822-9919
Curriculum	Aquatic Project WILD	Warren Gartner	317-549-0348
Curriculum	Backyard Acid Rain Kit	The Green Brick Road	416-465-1597
Curriculum	Blue Thumb Project	American Water Works	303-794-7711
Curriculum	Educating Young People About Water	University of Wisconsin	800-276-0462
Curriculum	Environmental Science Activities Kit	Center of Applied Research	800-288-4745
Curriculum	Food, Land & People	C Williams	602-963-7959
Curriculum	FOSS Water Module	Britannica Science System	800-554-9682
Curriculum	Gee-WOW! Adventures in Water Education	Ecology Center of Ann Arbor	313-995-5888
Curriculum	Give Water A Hand	University of Wisconsin - CES	800-928-3720
Curriculum	GoFishIN		317-549-0206
Curriculum	Groundwater Adventure Unit	Water Environment Federation	800-666-0206
Curriculum	Groundwater Festival Outreach Packet	Nebraska Groundwater Found.	800-858-4844
Curriculum	Groundwater Study Guide	Wisconsin Document Sales	608-266-3358
Curriculum	Hands On Save Our Streams	Izzak Walton League	800-284-4952
Curriculum	Hoosier Riverwatch	Lyn Hartman	317-232-0108
Curriculum	Indiana's Water Riches	Local Extension Office	
Curriculum	Kids, Cranes & Conservation	International Crane Foundation	608-356-9462
Curriculum	Liquid Explorations	Great Explor. in Math & Science	510-642-7282
Curriculum	Liquid Treasure Water History Trunk: Learning from the past	Watercourse	406-994-5392
Curriculum	Living In Water	National Aquarium	410-576-3887
Curriculum	Local Watershed Problem Studies	Univer. Of WI - Water Resources Center	608-262-3577
Curriculum	NatureScope: Pollution Solutions	National Wildlife Federation	800-822-9919
Curriculum	NatureScope: Wading Into Wetlands	National Wildlife Federation	800-822-9919
Curriculum	OBIS - Pond Guide	Delta Education	800-442-5444
Curriculum	Project Learning Tree	Donna Rogler	317-549-0354
Curriculum	Project Water Science	Water Education Foundation	916-444-6240
Curriculum	Project WET	Susan Schultz	317-562-0788
Curriculum	River Cutters	Great Explor. in Math & Science	510-642-7771
Curriculum	Saving Water Conservation Unit	Water Environment Federation	800-666-0206
Curriculum	Streamside Community	Adopt A Watershed	916-628-5334
Curriculum	Surface Water Unit	Water Environment Federation	800-666-0206
Curriculum	Teaching Aquifer Protection Notebook	Clemson University CES	864-656-3261
Curriculum	The Comprehensive Water Education Book	Office for Water Education	800-922-4693

Resource Guide

Curriculum	The Green Box	CA Dept. of Education	800-995-4099
Curriculum	The Stream Scene	Oregon Dept of F&W	5030872-5264
Curriculum	The Water Source Book	US EPA & TVA	770-426-
8936x234			
Curriculum	The Ways of the Watersheds	Frost Valley YMCA	914-985-2291
Curriculum	Understanding our Environment	National Science Teachers Association	800-722-6782
Curriculum	Wastewater Treatment Unit	Water Environment Federation	800-666-0206
Curriculum	Water and our Waterways, The Essence of Life	Zephyr Press	520-322-5090
Curriculum	Water Celebration, a Handbook	Watercourse	406-994-5392
Curriculum	Water Cycle, the Earth's Gift	Math/Science Nucleus	510-490-6284
Curriculum	Water Is Your Best Friend	Dept of Water Resources	916-653-1097
Curriculum	Water Matters	National Science Teachers Association	703-243-7100
Curriculum	Water Play	Public Inform. East Bay MUD	510-287-0138
Curriculum	Water Pollution and Environmental Studies	Chadbourne & Chadbourne, IN	216-543-7303
Curriculum	Water Precious Water	AMIS Education Foundation	209-255-4094
Curriculum	Water, Stones & Fossil Bones	National Science Teachers Association	800-722-6782
Curriculum	Watershed Explorations From Ridges to Rivers	Univ. of CA 4-H Watershed	805-781-5943
Curriculum	Waterways	MWD of Southern CA	213-217-6398
Curriculum	Waterwise: Lesson in Water Resources	Cornell Cooperative Extension	607-255-2080
Curriculum	Wet and Wild: The Physical Ocean	USC Sea Grant	213-740-1961
Curriculum	Wetlands are Wonderlands	Illinois-Indiana Sea Grant	217-333-9448
Curriculum	What is a Watershed?	Adopt A Watershed	916-628-5334
Curriculum	Wilderness and Land Ethic Curriculum	Wilderness Education Project	209-372-0735
Curriculum	WOW, Wonders of Wetlands	Watercourse	406-994-5392
Curriculum	Youth Education Package (Activity /video	American Water Works	303-794-7711
Game	Watershed Management Game	Terrene Institute	703-548-5473
Model	EnviroScape II	Terrene Institute	703-548-5473
Model	Groundwater Model	Water Education Foundation	800-666-0206
Performing Arts	Romp in the Swamp	Billy B	800-4BILLYB
Performing Arts	Willie in Wetlands	US EPA	800-832-7828
Posters	Variety - \$	Terrene Institute	202-833-8317
Posters	Wetlands Are Wonderlands	US EPA Region IV	404-347-2126
Posters	wetlands, water, wildlife, plants and people - \$	American Water Resources Association	301-493-8600
Posters	Wetlands: Wonders Worth Saving - \$	National Audubon Society	203-364-0520
Publications	Forestry	IDNR - Division of Forestry	317-232-4105
Publications	Soil	IDNR - Division of Soil Conservation	317-233-3870
Publications	Variety -	CINergy	317-488-3515
Publications	variety - guideline materials about environmental educ.	North American Association of Environmental Educ.	937-676-2514
Publications	Variety of farm related topics	Indiana Farm Bureau	317-692-7830
Publications	Variety-butterflies, wildflowers, mosses, mammals of IN	Indiana Academy of Science Publications	317-254-2700
Publications	Water	IDNR - Division of Water	317-232-4181
Publications	Wildlife	IDNR - Division of Wildlife	317-232-4080
Science Equip.	education materials and supplies	Delta Education	800-442-5444
Science Equip.	educational supplies & biological sampling equipment	Carolina Biological Supply	800-334-5551
Science Equip.	soil probe, forestry supplies, etc	Ben Meadows Co., Inc.	800-628-2068
Science Equip.	water testing kits	LaMotte Chemical Products	800-344-3100
Science Equip.	water testing kits & equipment	Hach Equipment Company	877-444-3140

Resource Guide

Software	Wetlands Education System	Purdue University	765-494-1172
Story	Wetland Tales - A Collection of Stories for Wetland Education	Sierra Club	317-231-1908
SWCD Inform	Environmental Focus Curriculum Guide	Noble County SWCD	219-636-7682
SWCD Inform	Promotion of Local SWCD Service	Hamilton County SWCD	317-773-1432
SWCD Inform	Residential Guide for Soils, Drainage & Erosion Control	Hamilton County SWCD	317-773-1432
Video	It's Found Underground: Groundwater, Our Buried Treasurer	Ecology Center of Ann Arbor	313-995-5888
Video	The Secret of the Pond	Missouri Botanical Garden	800-927-9229
WWW	America Water Works Association	http://www.awwa.org/partner.htm	
WWW	Aquatic Ecology	http://www.execc.com/~aqsys/index.html	
WWW	Army Corps Of Engineers	http://www.wes.army.mil	
WWW	Earth's Birthday Project	http://www.earthsbirthday.org	
WWW	Environmental Education Reform & State & National Calendars	http://www.edgateway.net	
WWW	EPA	http://www.epa.gov/ow/	
WWW	EPA Surf your Watershed	http://www.epa.gov/surf	
WWW	GREEN - watershed education	http://www.econet.apc.org/green/	
WWW	IDEM	http://www.ai.org/idem	
WWW	Indiana Association of Soil and Water Conservation Districts	http://www.iaswcd.org	
WWW	Indiana Department of Natural Resources	http://www.state.in.us/acin/dnr	
WWW	Indiana Watershed Information	http://www.trader.com/users/5012/0614/water.htm	
WWW	Indiana WETnet - A Virtual Water Resource	http://ingis.acn.purdue.edu:9999/wetnet.html	
WWW	Keep America Beautiful	http://www.kab.org	
WWW	Know Your Watershed	http://www.ctic.purdue.edu/	
WWW	National Arbor Day Center	http://www.arboday.org	
WWW	National Association of Conservation Districts	http://www.nacdn.org/education/education.htm	
WWW	National Audubon Society	http://www.audubon.org	
WWW	National Wildlife Federation	http://www.swcs.org/	
WWW	Soil & Water Conservation Society	http://www.igc.apc.org/nwf	
WWW	The Environmental Education Network	http://www.envirolink.org/enviroed	
WWW	The Environmental Organization Web Directory	http://www.webdirectory.com	
WWW	The GLOBE Program	http://globe.fsl.noaa.gov	
WWW	Tour Worlds Largest Purification plant in Chicago	http://www.ci.chi.il.us/worksmart/water/JardineTour	
WWW	University of Wisconsin - Give Water a Hand	http://www.uwex.rdu/envirn.html	
WWW	US Fish & Wildlife Services	http://www.fws.gov/	
WWW	USDA- Natural Resources Conservation Service	http://www.in.nrcs.usda.gov	
WWW	Water chemistry ,facts,trivia & more - Australia	http://www.yvw.com.au/schools	
WWW	Water Quality Information Center	http://www.nal.usda.gov/wqic	
WWW	Water Science for Schools, water basic, trivia for USGS	http://www.ga.usgs.gov/edu/indexjs.html	

**** NOTE:** Many of the curriculum materials have a cost as well as videos, posters

Please send any additional resources to: Susan M. Schultz – Indiana Project WET
 NREC - 5785 Glenn Road, Indianapolis, IN 46216-1066 Phone 317-562-0788 FAX – 317-562-0790
 e-mail – projectwet@dnr.state.in.us Check Out Indiana Project WET's homepage at <http://www.state.in.us/dnr/soilcons/wet/index.htm>
 We can include a section on books – please send Name of book, author and publisher and ISBN #

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